MONTHLY

JOURNAL OF AGRICULTURE.

VOL. III. APRIL, 1848. NO. 10.

MARYLAND AND VIRGINIA,

COMPARED WITH MASSACHUSETTS AND RHODE ISLAND IN THEIR AGRICULTURAL AND DOMESTIC CONDITION AND POLICY.

AGRICULTURAL FAIR AT EASTON, MARYLAND, OCTOBER, 1847.

THE accounts which have appeared of this last exhibition of the zeal, industry and taste of our friends in that region, of which we shall speak in another place more particularly, have been highly favorable and auspicious; nor is there any good reason to be given why it should be otherwise—for it would be an egregious error to attribute any defect of improvement to any general want of knowledge of the means by which such improvement can alone be secured and accelerated. Still grosser, perhaps, would be the mistake that should ascribe any such deficiency to want of industry on the part of the Farmers generally, in the district referred to, or in the State at large. Our personal knowledge enables us to assert the contrary.

When we hear so much about the "ten-hour system" of labor in cities, and demagogues make themselves hoarse in decrying the hardship and oppression that would require more than ten hours' labor in the day from the poor mechanic —and yet more when we see these poor mechanics, wearied out with sitting around a new building, twirling their thumbs, until the clock strikes to go to work *according to the rules* of the Trades Union—we often think of the Agricultural Laborer, who, without the power of combination or the disposition to complain, rises at 5 and drudges on, with brief intervals, until at least 6 P. M., making at the least 13 hours: the master and farmer over all being, as he should be, the first to call all hands at dawn of day, and the last to see all snug after dark. From daylight to dark is the measure for him without whose products all other classes would perish and disappear from the face of the earth.*

No! it is not so much for want of knowledge or of diligence that Agriculture

* Here it may repay the trouble to note the difference in the pay and the labor of the town mechanic and the agricultural worker. Take the gardener, for instance. In digging a square perch of ground, in spits of the usual dimensions, (7 inches by 8 inches,) the spade has to be thrust in 700 times, and as each spadeful of earth, if the spade penetrate 9 inches, as it ought to do, will weigh on the average full 17 pounds, eleven thousand nine hundred pounds of earth have to be lifted. As there are 160 perches or roods in an acre, in digging that measure of ground the garden laborer has to cut out 112,000 spadefuls of earth, weighing in the aggregate 17,000 cwts., or 850 tons, and during the work he moves over a distance of 14 miles. As the spade weighs between eight and nine pounds, he has to lift in fact 1,278 tons—equal

languishes, in any part of the country with which we are familiar. This decline, or stationary condition, results, in our judgment, from defective legislation, the tendency of which is to disperse instead of concentrating our population according to its natural increase, at least on the seaboard. Much more frequently than agriculturists are aware, *the policy and action of Governments*—State and Federal—silently influence their condition and blight their prospects. The policy most congenial to the prosperity of the farmer, is that which most directly tends to bring the manufacturer and all other *consumers* of the fruits and products of his labor, nearest to his farm, so that as little time may be lost, and as little money expended in the business of exchange as possible. Perhaps no country exists, unless it be exclusively a Cotton country, from which a greater proportion of its products is carried entirely away and sold off the farm than from the Eastern shore of Maryland—indeed from all Maryland and Virginia; leaving but little, even of its offal, to replenish the land on which it grew. It has no consumers near at hand except its producers, or not one-fourth as many as it ought to have, with its manufacturing power, and chiefly, hence, no increase, but rather a *falling off of population for forty years!* How fortunate for that noble region of country—we allude to the Eastern shore of Maryland and Virginia, destined by Nature apparently to be, from the Capes of the Delaware and Chesapeake up to the Pennsylvania line, but one garden and orchard, and dairy and poultry-yard and butchers' shop for the large cities that encircle it—how fortunate for the landed interest of all that peninsula would be a steady, undeviating, not party but national policy that should force, by the power of an obvious self-interest, all the manufacturers now employed abroad in the manufacture of the hundreds of millions of goods imported into Baltimore, Norfolk, Philadelphia and New-York, to come with their capital and machinery and settle down in New-York, New-Jersey, Pennsylvania, Delaware and Maryland!

A great variety of articles, fruits and vegetables, would be made, and many of them consumed on the ground, in the production of butter and cheese, and pork, and poultry, and beef and mutton, in lieu of the wheat and other things that are now sent away, and that, being less bulky and perishable, are now made in the Far West, and can be brought into market in competition with them at small cost for transportation. Potatoes and turnips, and cabbages, and carrots, would be sought for or consumed on the spot, to sheep and hogs, and cows and bullocks.* The manure would be returned, the land enriched, rich swamps would be cleared up, and marshes and meadows drained; population would concentrate instead of dispersing. The *spread* of it would be slow and only as the wholesome fruit of actual redundance; and, above all, schools would multiply, teach-

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to more than 2,500 *hogsheads of tobacco!* An able-bodied laborer can dig ten square perches a day—in doing which he lifts 177,500 pounds—for which he gets an average, perhaps, of 75 cents and finds himself; while the carpenter and brick-layer, with their jack-plane and trowel, get at least $1 50 to $2. Is it any wonder that the current of emigration sets always to the towns?

* At a late Agricultural Meeting in the Legislative Hall in Boston, Mr. Proctor, of Danvers, stated that the price of carrots there was $8 a ton, and that 35 tons had been grown to the acre, and that "32 were not uncommon"—$256 to the acre! These carrots are either sold to consumers very near, or probably fed to pigs and cows, and the manure kept on the farm to enrich it, and the pork, and milk, and butter, and cheese sold off. What would the farmer do with the carrots in Virginia? How much time, and force, and expense to get them to market, if any could be found, at a great distance over bad roads?

Immense factories are driven by steam in Newburyport, Mass.; why not in Annapolis—in Richmond—in Norfolk—in Alexandria—in Georgetown? It is a great mistake to suppose that even white labor cannot be found; it can be found, and *cheaper* than in New-England. Set the pot of honey, and the bees will soon come to it.

ers would be *prepared* specially for their noble calling, and be more respected and better paid, as they should be. With improved education, we should have improved morals, and the whole community, as it would increase in the sum of its knowledge, would possess in like proportion an accumulation of productive capacity, and a higher character for all that gives to communities the power of local and social attraction.

Should not every community covet and take measures to secure the reputation and general intelligence and prosperity enjoyed by New-England, where free trade in money and a large proportion of consumers, give men the ambition and the means to have it said of them, as was said by an accomplished foreigner—De Tocqueville—sent out expressly to examine and report upon our social and political institutions? Hear his testimony:

"In New-England, every citizen receives the elementary notions of human knowledge; he is, moreover, taught the doctrines and the evidences of his religion, the history of his country, and the leading features of its Constitution. In the States of Connecticut and Massachusetts, it is extremely rare to find a man imperfectly acquainted with all these things, and a person wholly ignorant of them is a sort of phenomenon."

Why, then, farmers of Maryland and Virginia, do you not look into these things—break away from leaders and demagogues—learn to think for yourselves, and demand of all in authority to enact, as a permanent National measure, a Protective Tariff, that shall force the foreign manufacturer to relinquish, now and forever, all hope of supplying us with his goods, until he comes and plies his shuttle and his forge within hearing of our plows—that the products of the one may be taken, as directly and inexpensively as possible, in exchange for the other; instead of the present ruinous system, under which your lands are condemned to lie idle because there is no market for a thousand things that would pay well if the consumers were at hand to demand them! As the system works at present, three-fifths of the value of what you do make, is lost in the act of exchanging for the things for which it goes in payment. Hear, on this point, the declaration of the accomplished Editor of the New-Orleans Bulletin, in the very heart of the Cotton and Free Trade region:

"We buy," says he, "in New-Orleans, negro cotton goods manufactured from one bale of cotton, for about the same sum that we *receive for five bales* of raw cotton; the other four bales being for the labor and profits, which are divided between the ship-owner, Northern or English operatives, mill-proprietor, agents, and commission merchants—all of which would be retained at home, for the benefit of our own citizens, had we cotton-mills *established here*."

But who will risk his capital in the establishment of cotton-mills, that may do well under the laws of to-day, and ruin all concerned under the different policy and legislation of a new dynasty to-morrow?

"Since 1843, millions of dollars," says a writer on the spot, "have been invested and expended in Pennsylvania in the erection of furnaces, forges and rolling-mills; and thousands and *tens of thousands* of men have found employment at wages which have remunerated toil in the various branches of business connected with this trade, and in the extension of our internal improvements. These important interests and these cheering prospects have been sacrificed; and thousands of men and their dependent families, we fear, will soon be temporarily left without the means of subsistence."

"Temporarily left without the means of subsistence!" and what next, good reader? What is the only resource which the policy of the Government—the Representatives of the *Landed Interest*, those who make your laws—what is the resource left for these "thousands of dependent men and their families"? Exactly that, and that only, resource which has been draining your population and leaving you with millions of uncultivated lands on the seaboard for half a cen-

tury. Their natural and only resource is to go away West, and turn *rival producers of your staples*, because they are your only staples—Corn and Wheat—that may be made with little force and transported cheaply in kind, or on the hoof, to market. Thus you see your Government policy—your public legislation—tends to scatter population and make all producers, leaving you no dependence but an overstocked and ruinous market at home, or a more precarious and ruinous one abroad.

Patrons of this journal! are we traveling out of our latitude in discussing questions like this, which lie at the very foundation of your condition? Or shall we forever and forever harp on stale matters of making corn and wheat, and how to plant potatoes, and how spread manures, all of which you know quite as well and a little better than many who undertake to teach you? Or shall we surfeit you with accounts, a thousand times repeated, of how some monstrous bullock has been fattened at enormous cost into a mass of slush, weighing 4,000 pounds—or a single acre made to produce what others were made to do fifty years ago? Shall we treat you as children, to be amused with humbugs, or as men, ardently seeking new and valuable information? We confess this last is most to our own liking, and most what we feel we are ourselves in want of. Much more do we and you want to know what will concentrate instead of scattering and driving off your population, and how you can get the nearest and most remunerating market for such things as will pay well if sold near at home, and that cannot be made in rivalry with you—as wheat and corn can, even to the very foot of the Rocky Mountains. Were it necessary to look for high authority to justify us in pressing such topics on the attention of the agricultural community, in an agricultural journal like this, and to plead the example and the doctrines of a traveler of sagacious and profound observation—and withal a Southerner and friend of Free Trade, where Free Trade is practicable—we might quote the remarks of Hon. J. R. Poinsett, addressed to—whom do you suppose? Not to politicians and legislators, but to the *Agricultural Society of the State of South Carolina*—a body as enlightened as the same number of cultivators, or of any class, to be found in any State or country on earth, except lately, since the kindred sciences have been applied to Practical Agriculture in England and Scotland. Hear what Mr. Poinsett says of the effect of the presence of Manufacturers on the Agriculture of a country:

"Both from observation and reflection, I am convinced that a State entirely destitute of Manufactures, whatever may be the extent and nature of its staple productions, will always be inferior to one that combines manufactural industry with agricultural wealth. In the first place, materials to a very large amount, which might be worked up to advantage, but which will not bear the cost of distant transportation, are wasted for want of neighboring manufactures. In the next, it is destitute of those towns and villages that grow up around such establishments, affording home markets for the produce of the farmer, more advantageous than those at a distance, and supplying him with necessary articles at a cheaper rate, the price being diminished to the amount of the cost of transportation. Again, manufactures greatly increase the productive resources of a country; the use of steam and water power, and the vast number of mechanical contrivances and labor-saving machines set in motion by them, augment to an almost indefinite extent the productive industry of the country; while every discovery in science applicable to the useful arts which manufactures give rise to, adds still farther to its wealth. It is true that the application of Science to Agriculture has increased its products, and that we have some few labor-saving machines, but how few and insignificant are they when compared with those that multiply a thousand-fold the industrial capital of a manufacturing district! Where manufactures exist, the individuals interested in their success and prosperity, from their proximity to each other, easily unite their efforts for all purposes of common interest, and good roads and canals result naturally from such combinations, and convenient lines of communication are everywhere established, so as to give to each one his fair share of the advantages of trade. We, on the contrary, live far apart, and meet

but rarely to take into consideration our common interests; and when we do meet, we remain together too short a time to originate or perfect any great measure of general improvement. In purely agricultural districts, therefore, the products of industry find their way to market by miserable roads and circuitous lines of communication, to the great loss and inconvenience of the farmer."

Let us suppose two farmers, each with an estate of equal extent and fertility, the owners equal in management and intelligence—but one of them has within a mile a miller to grind all and his family to eat a part of his corn; the tanner to buy his hides and to buy his pork in return; the shoemaker to make his shoes and buy his milk; the weaver to sell him cloth and buy his wool; while the other would have to send his corn to be ground and his hides to be tanned, and his leather to be made into shoes, and his wool to the stapler at a distance of 100, or 50, or even 20 miles, what would be the difference it would make in the intrinsic value of the two estates! What would be the cost in time, in labor and in manure, that one would have to pay or to lose over the other? Well, will not what applies in this way, to an individual farmer and his family, and his interests, apply to a whole nation of producers that have to send to foreign countries for what they want?—for a nation, after all, is but an aggregation of families. Free Trade would be very well, if all nations composed one Government, bound by a common interest, and its action had in view the welfare of the majority of the whole; but we must take the world as we find it, and as it is, no one of them can control another; and in this war of interests, the one that undertakes to play the liberal and magnanimous must expect to be sacrificed. The one that makes its agricultural prosperity depend on the arbitrary policy of foreign Governments, puts itself in the worst of all conditions—one of perpetual uncertainty and fluctuation, liable to have all its courses of industry disturbed by alien influences over which it has no control. There are countries so small, with climates and resources so limited, that they are compelled to rely on international exchanges. In that respect ours is essentially distinguished from others, for there is nothing except tea and coffee that we might not make, and these are not quite necessaries of life, and if they were we have enough to spare to give in exchange, on terms of mutual advantage.

Let it not be said that the causes which depress the Agriculture, and drive away the emigrants and the population from Maryland and Virginia, and the Southern States, are of universal prevalence and beyond the reach of cure: such is not the fact. The evil which does not, as most of it does, spring from defective national legislation, is of local and peculiar character, whatever it be. Look for a moment how it exhibits itself in States of the same age, and resembling each other in some of the principal features of their geographical position. Compare, for example, Maryland and Massachusetts, the two oldest sisters of the Republic—born about the same time, of the same parents, and pretty much the same education—with difference of religious training equal to that between tweedle-dum and tweedle-dee. They took a fair start; and now let us see how they get along in the race. Let us see whether one does not seem to have been in charge of some young greenhorn, just come upon the turf. The other under the instructions of "old Nap," Col. Johnson himself, with Archy Taylor for his trainer. Here they go, then. Maryland at the first jump spreads herself over 7,040,000 acres. Massachusetts, like little Trifle, covers, as she stands, but little over half as much ground—4,640,000 acres. Maryland mild in climate, scarcely any winter, soil easily worked, free from stone, and responding quickly to good treatment—Massachusetts naturally cold, hard, hilly, stony and sterile.

	Acres.	Population in 1790.	Population in 1840.	Increase in 20 years.
Maryland	7,040,000	319,728	470,019	62,691
Massachusetts	4,640,000	378,717	737,699	214,412

Maryland, on a basis of 407,350, in the year 1820, increased in twenty years but 62,669, of which 40,000 occurred in one city; while Massachusetts, on a basis of 523,287 in 1820, went up in the same twenty years, to 737,699; having increased 214,412—besides supplying Maryland very freely with school-masters and school-mistresses, and merchants and manufacturers.

Now bearing in mind, that in Maryland and Virginia, the vehement denunciations of banks and corporations of all sorts, make the ladder on which young political aspirants, (of whom the farmers are the hobby-horses,) mount first into the Legislatures, and then into Congress, and then into offices at home and missions abroad; bearing all this in mind, let us compare the policy and circumstances of the regions referred to, leaving you, reader, to judge how far free trade in money and facilities for establishing banks and factories, have had influence on the growth of population, and the cause of education; in a word, on the social improvement and political power of these old sister States respectively. In Massachusetts, be it remembered, the banks have never suspended specie payments. Yet there, and in Rhode Island, almost any dozen people in any village may form a Bank on complying with a few simple forms, and the people are left entirely free to deal with them in money, as they would deal in potatoes or onions. Hence, as we are well informed by a wealthy citizen of Massachusetts, well known in Baltimore, where he goes with his capital, to buy Maryland produce and sell Massachusetts manufactures, *any industrious, respectable man, can borrow money for any industrial enterprise* either from the banks or from individuals. Is it so *in the country* of Maryland or Virginia?

The men who direct the banks in New-England and lend the money, are like the borrowers—plain, industrious working-men. The shares of stocks are divided, in small amounts, among a great number of people. Almost every farmer has a share in a bank or factory, or a turnpike road, or a railroad—generally a little in all; and the amount given to a Cashier or President in Baltimore, including his house-rent, would pay all the expenses of conducting a Massachusetts or Rhode Island Bank. Now look at the difference of population and banks, and banking capital, in the four States. We only state the facts, and leave you—kind and discriminating readers—to draw the inference, and to see the connection between these things and the Agriculture of the four States—for now we will draw little Rhode Island and the Old Dominion into the lines of comparison.

	Area in Acres.	Population in 1820.	Population in 1840.	Number of Banks.	Bank Capital.	Employed in Agriculture.	Employed in other pursuits.
Maryland	7,040,000	407,350	470,019	23	8,901,000	72,946	29,041
Virginia	39,233,280	1,065,379	1,239,737	36	10,502,000	318,771	69,893
Massachusetts	4,640,000	523,287	737,699	109*	32,112,000	87,837	125,067
Rhode Island	768,000	83,059	108,830	62	11,023,000	16,617	25,156

Here it will be seen that even little Rhode Island, with her 100,000 inhabitants, and less than a million of acres of land, has double the number of banks, and the use of more capital, to give activity to her industry, than Virginia with her more than a million inhabitants *and near forty millions of acres, instead of less than one!* Nor, with all the denunciations fulminated against banks, and corporations of all sorts, do we hear of any failures of Banks in Rhode Island. Instead of general and sweeping condemnation against banks and corporations, by people who

* Large as was already the banking capital of Massachusetts, the addition of the present year (1848) is about two and a half millions.

have not always the clearest comprehension of what they are denouncing, their hostility should be directed against the *abuse* instead of the use of them; and that abuse is always in proportion to the perplexities and restrictions which overweening suspicion imposes on what should be free to regulate itself. The money power in some States, where there are few Banks and much difficulty in borrowing, is a monopoly engrossed and used by a few, to take advantage of the necessities of the many—and *especially the cultivators of the soil.* In New-England, the money power is distributed among the many, and used for the benefit of the enterprising and industrious of *all classes.* In Maryland and Virginia, banking capital is used, in vast proportion, by large merchants, and great speculators in the produce of the farmer and the planter. In thriving New-England it is owned by and loaned to the middling farmer, the mechanic, the gardener, the small manufacturer and shop-keeper—in a word, to industrious, prudent men, in all the walks of useful employment. Fortunately, that truly republican people are not made up of a few great men, with all around of pigmy stature. All are nearly of the same hight, few very rich or powerful, nor many poor and powerless. In Maryland, bank capital is loaned to nabobs by the $20,000, and they are thanked for taking it—while thousands of industrious men toil on in poverty through life, or are driven from the State for want of a few hundreds to start them in useful business. In Maryland, the monopoly of capital by a few gives them power over the producer and his produce; and over the mechanic and his genius, which would often bring independence if he had capital to put it in motion. In New-England, banks are numerous, stockholders more numerous, and the capital is loaned in small sums, to hosts of industrious people of all classes and denominations, whose name is legion. Hence universal activity and universal and nearly equal prosperity—but very few great men, and as few very little ones.

We should weary the reader were we to present all the remarkable points of contrast that have been produced in the condition of these two Middle and two Eastern States, by their different policy and legislation and ideas as to money and manufactures—for it cannot be alleged that Massachusetts and Rhode Island possess any natural advantages over their larger sisters in respect either of water-power, or materials, or resources mineral or agricultural—quite the contrary. But look for a moment how the result must bear upon the landed interest of these States respectively:

Massachusetts and Rhode Island united have invested in *Woolen* manufactures	$4,865,200
In *Cotton*	24,740,099
Total	$29,605,299
Virginia and Maryland: in *Woolens*	$229,980
In *Cotton*	2,603,480
Total	$2,833,460
Massachusetts and Rhode Island more than Maryland and Virginia	$26,832,839

Now who can fail to see the obvious effect upon the landed interest of these two sections? In the East, they consume at home all they can draw out of their land, and return to it, to sustain its fertility, not only the offal and manure of all they make, but they draw immense supplies, to be consumed on their land, from the Maryland and Virginia farmers, who send away everything and consume comparatively nothing—leaving their lands to recruit themselves or be worn out, as they inevitably must. The Maryland and Virginia farmers send their hides out of the State to be tanned: their wool out of the State to be woven; their beef to be eaten; their flour to be eaten; their corn to be eaten; while the Yankee tempts the weaver to come to the wool-grower, the tanner to

come where the hides are grown—all, in fact, whose labor is employed in factories producing $52,158,683, to go *there*, and eat his bread, and his meat, and his milk and butter, and cheese, and fruit—all on the spot. Everything is kept and consumed at home.*

What is wanting, as it seems to us, (despising the thought of speaking as a driveling partisan in this journal and on such a question) is, that the American people in *a body, and as with one voice*, should determine to break the colonial vassalage which elevates our Industry to-day and sinks it to-morrow, according to the accidental wants and vacillating polity and Tariffs of foreign Governments —especially that of England, who in ceasing to be our Mother has become our Step-Mother or Governess. In our vast extent, embracing every soil and climate, we may adopt an American policy, independent of the world, our States reciprocally supplying and demanding of each other all they want and all they can produce; and we can force the capital and the machinery now employed in the fabrication of the $100,000,000 that we buy abroad, to come and be employed here; or our own citizens, seeing their way secure, will occupy their place. Then would our people concentrate, instead of scattering; rich swamps and pocosons would be drained and brought under the spade and plow; and with dense population would come education, and power, and prosperity, and increase in the value of lands. We should first thicken on the seaboard, and gradually swell and spread around the circumference, as Nature spreads the forest, by natural expansion, and as she intended society to grow by a natural accretion and not by having its limbs torn off and its seeds scattered to distant and ungenial soils, by lightning, and storms, and monstrous disturbances, such as are constantly driving sons from fathers and daughters from mothers.

"The first and great desire of Man," says H. C. Carey, in that extraordinary and powerful work, 'The Past, the Present and the Future,' "is that of maintaining and improving his condition. With each step in the progress of concentration, his physical condition would improve, because he would cultivate more fertile lands, and obtain increased power over the treasures of the earth. His moral condition would improve, because he would have greater inducements to steady and regular labor; and the reward of good conduct would steadily increase. His intellectual condition would improve, because he would have more leisure for study, and more power to mix with his fellow men at home or abroad; to learn what they knew, and to see what they possessed; while the reward of talent would steadily increase, and that of mere brute wealth would steadily decline. His political condition would improve, because he would acquire an increased power over the application of his labor and of its proceeds. He would be less governed, better governed, and more cheaply governed: and all because more perfectly self-governed."

Heaven bear us witness that we find no pleasure in the contemplation of the picture of our native State which Truth tells us we must draw if we would sketch it with her pencil. Yet we must proceed to give it a few more touches, by way of filling-up.

The population of Baltimore in 1830 was 80,625; in 1840 it was 102,313. Deduct that increase from the total increase in the whole State during the same period, and there remain, to be divided among all the counties, in these ten years, only 1,299, or about 60 to a county; but so far from some of them having increased at all, nine out of twenty have actually *retrograded* within the 20 years prior to 1840; and this has happened as well on the Western as on the Eastern shore.

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* Annual produce of the manufacturing industry, by the Census 1845:

Of Massachusetts	$43,518 051	
Rhode Island	8,640 622	
		52,158 683
Virginia	8,349 218	
Maryland	6,212 677	
		14,561 895
Massachusetts and Rhode Island more by		$37,596 789

Those which have not held their own are: Caroline, Kent, Queen Anne, Somerset and Talbot (on the Eastern,) and Charles, Frederick, Montgomery and Prince George's. Frederick fell off probably not in fact, but because Carroll has been detached, and of that county there is in the statement before us (Darby's) no account. What surprises us is the diminution in Montgomery. How has been lost, there, the example of the Brookses and Stablers, and many others, exemplars of intelligent industry and sagacious management! Have they no water-power, or have they no capital to bring it into play, and is much lost on bad roads or otherwise in the work of exchange?

On the Eastern shore of Maryland, in the time above named,

Caroline	*lost*	2235	Worcester	*gained*	916
Kent	..	611	Dorchester	..	1088
Queen Anne	..	2319	Cecil	..	1184
Somerset	..	71	Total		3188
Talbot	..	1299	Gross loss		6535
Total		6535	Gain		3188
Net loss on the Eastern shore					3357

Now is not a state of things exhibited here, that imperiously demands the anxious investigation of every landholder?

But, farmers of Maryland! as we would rejoice to see you going ahead in all that constitutes strength and prosperity, excuse us for asking, Have you the men willing to go into public life, to whom you can assign the business of Legislation, and who are animated by a true and noble *American*, not party, spirit; and who, moreover, are educated up to the point of capacity *equal to such inquiries?*—men who have the self-command to lay aside party feelings and boldly follow the line of duty wherever it may lead? and, above all, ☞ Will you support them in so doing? Here, as you see, instead of a steady thickening of population, increase in the variety and quantity of your staples, and constant appreciation in the value of your lands, such as might naturally be expected from its locality, its natural fertility, and the ease—comparatively with New-England—with which it can be labored, you behold moneyed men with their capital turning their backs on you, and going away to the Western Frontier for investment, and your population diminishing! Such results cannot have come to pass without some powerful depressing incubus resting on your landed interest, arresting its development and melioration, and paralyzing your Industry—reminding one of the squab fiend described by Darwin, flitting "o'er fen and lake and bog," until he finds "some lone 'wildered maid with sleep oppressed," and there

> "On her fair bosom sits the demon ape
> Erect, and balances his bloated shape—
> Rolls in their marble orbs his Gorgon eyes,
> And drinks with leathern ears her tender cries."

What is that influence, and how is it to be removed? And is it not worthy of the consideration of all agricultural societies, and of all good men devoted to the prosperity of the landed interests? Nay, is it not a matter for investigation, quite as practical and as promising of good results, as would be an inquiry for the thousandth time, how much lime should be spread on an acre—and how big and fat *can* a bullock or a hog be made? Pardon the plainness and the freedom of such questions from one who, in prosperous as well as adverse times, has ever found his greatest pleasure, all his life, in earnest (however ineffectual) inquiries and exertions to assert your rights and to promote your welfare.

SHOULD THE LOOM COME TO THE COTTON, OR THE COTTON GO TO THE LOOM?

To the cotton-grower this is a question of the highest importance. His future prosperity depends on the correctness of the answer he shall make to it, and we desire, therefore, to offer for his consideration some views that may tend to enable him to answer it understandingly. The enlightened Editor of the New-Orleans Commercial Bulletin—in the center of light and interest on the subject—remarks:

"We buy, in New-Orleans, negro cotton goods manufactured from one bale of cotton, for about the same sum that we receive for five bales of raw cotton; the other four bales being for the labor and profits, which are divided between the ship-owner, Northern or English operatives, mill proprietors, agents, and commission merchants; all of which would be retained at home, for the benefit of our own citizens, had we cotton-mills established here."

Having bestowed some reflection on the above statement, we respectfully invite our readers to accompany us in an examination of the *nature of the exchanges* to which it refers.

The number of working hands engaged in the production of Cotton may, with some approximation to exactness, and near enough for our purposes, be set down at 800,000, and the average product per hand at 1,000 pounds, giving as the total product 800,000,000. Each hand, however, is supposed to cultivate about as much land in grain as in cotton.* The labor employed in the production of cotton is therefore equivalent to that of 400,000 persons, and the product is the equivalent of 2,000 pounds, or five bales, to the hand.

A cotton factory containing 250 operatives, one-fourth only of whom are males, will convert 2,000 bales of cotton into cloth. This gives 8 bales per hand. Five persons in a mill will therefore convert into cloth as much cotton as eight will produce; and of these five, three-fourths are females quite too young and feeble for efficient field labor. A fair estimate of the quantity of power needed for manufacturing and producing, would give to the work of production more than twice as much as is required for that of conversion or manufacture; but we will assume that five persons are required for the manufacture of that which is produced by eight.

The labor of production is as valuable as that of conversion, and a just distribution of the proceeds, would give to the planter eight parts out of thirteen, leaving the remaining five for the persons employed in converting the cotton into cloth. We see, however, that the planter gives five bales for one, or a hundred for twenty; whereas if the distribution were in the just ratio of the labor employed, the planter should have sixty and the manufacturer forty.

This is, we believe, less than the true and just distribution would give to the planter; but to avoid the possibility of error, we will assume that the product should be equally divided between the producer of the cotton and the parties by whom it is converted into cloth. Two bales of raw cotton should then pay for one bale when manufactured; yet here we see, on the authority of the Editor

* See Southern Quarterly Review for January, 1848, page 120.

of the N. O. Commercial Bulletin, that the planter has to give five for one. What then becomes of his remaining three? Assuredly no planter should rest satisfied until he can answer this question, to the end that as far as practicable he should escape from so heavy a tax. To answer the question, let us endeavor to trace the course of operation to which the five bales of cotton are subjected from the time of leaving the plantation until they are returned in the shape of one bale converted into cloth. First, we have the transportation to the place of shipment, in which a part is swallowed up.* Next comes commission to agents in New-Orleans or Charleston. After this comes transportation to England, or to New-York or Boston on its way to Lowell or Manchester. Next, commissions in New-York, Boston, Liverpool, and Manchester. Next come wages to operatives and profits to master-manufacturers. Following this, we have transportation from Lowell or Manchester, and thence to New-Orleans, with an endless train of charges and commissions, the result of all which is, that the planter gets back *one* bale for five, when he should have, by a just distribution of profits in proportion to labor, *almost three*. He gives five for one instead of two for one (the real, naked difference between producing and converting, making a most liberal allowance for the latter,) and the other three are irrecoverably lost to him.

Let us now inquire of what all these charges consist, and we shall find that they resolve themselves almost altogether into the single article of *food*, the only others being a small amount of clothing and lodging. The cart and the wagon are composed chiefly of the food eaten by the men who made them. The road by which they travel in conveying the cotton to the place of shipment is composed of, or chiefly based upon, the food of the men who made it. The steamboats by which it is conveyed to New-Orleans represent the food of the men who built them, of those who navigate them, and of those who provide the fuel. The commissions represent the food of the men who sell the cotton, of the servants who wait upon them, of the men who build houses for them to live in, and carriages for them to ride in. The packet-ship represents the food of the men who felled and sawed the timber, and of those who transported it; of the men who dug and smelted the ore and fashioned the iron used in her construction, and the carpenters and workmen by whom it was put together. The work of twisting, and weaving, and finishing, represents the food of the twisters, and weavers, and finishers. If now we inquire what proportion the latter bears to the whole quantity, we shall find that it is far less than one-fourth of the whole. We will, however, assume that it is one-fourth, and then show what becomes of the other three bales that the planter pays for one of manufactured cotton.

Debtor.	*Creditor.*
To five bales of cotton.	By *one* bale cotton twisted, woven and finished. By *one* bale given for the food of the persons who twisted, and wove, and finished it. By *three* bales given for the food of the persons intermediately employed in carrying it to the twister and weaver, and bringing back to the planter the one bale twisted and woven ready for use.

* Of the expense of this first movement some idea may be formed by those who have seen it coming over dreadful roads, up to the hub, dragged slowly along, 20, 30, or 40 miles, as we have seen it coming into Natchez and Vicksburg, hauled by five yoke of oxen carrying 2,800 to 3,000 pounds, and so slowly that motion was scarcely perceptible. So many perish in the yoke in winter and spring that it has been said, with some exaggeration, that you might walk on dead oxen from Jackson to Vicksburg. That was before the railroad was made. A wagon is loaded up, say 14 miles from Natchez, and started at night, and reaches there in time to get back the next night time enough to "load up." Thus ten oxen have been wearing and tearing and dropping their manure on the road for 24 hours to make one load.

This would seem to be a bad bargain. The planter will perhaps say, however, that we have allowed nothing for the use of the machinery employed in the conversion. True, we have not. Neither have we charged anything for the use of the machinery of production. Let us now see how that matter stands:

The average production of cotton does not exceed 300 pounds of clean wool to the acre. To produce two thousand bales would require, then, nearly twenty-seven hundred acres, actually under cultivation, to say nothing of all the rest of the plantation not in cultivation. The average amount of labor, per acre, for fitting these lands for production, including fencing, machinery, buildings, gin-houses, &c., is at least one hundred days, and we should be safe in putting it much higher.* This would give 270,000 days of labor. A mill that will convert these two thousand bales into cloth, does not represent more than 70,000 days of labor. The machinery of production is therefore more costly than that of conversion, in the ratio of four to one.

Under this head, then, the account will now stand thus:

Dr.		*Cr.*	
To machinery for producing four bales of cotton	16	By machinery for converting one bale of cotton	1

The transaction appears to be a very unprofitable one. The planter is giving five bales of cotton, produced by the aid of very costly machinery, for one bale converted into cloth by aid of comparatively inexpensive machinery. He gives four bales for doing that which, if the machinery were on or near his plantation, might be done for less than one bale.

In the performance of this operation, he is always in fact, as we have seen, buying food and paying for it with cotton. He is always paying for it in distant markets, where its price is high, while he or his countrymen are perpetually engaged in the effort to sell it at low prices at home. In getting his yard of cloth he pays for food consumed in the steamboat—in New-Orleans—on ship-board—in Liverpool and Manchester, at which latter place it is probably four times higher than that at which he would gladly sell on his plantation, and he wastes a vast quantity because of the want of a market near him, and the heavy cost incident to its transportation to distant markets.

One acre of land yields 300 pounds of cotton. One hand in a mill converts 8 bales, or 3,200 pounds, the produce of more than ten acres.

An acre of land, well cultivated, will supply food for one person who will convert these eight bales into cloth.

The planter gives four bales for having one converted, or eight for the conversion of two, according to the testimony of an enlightened journalist residing in the heart of the cotton region, and speaking under the benefit of the best lights on the subject.

Let us now see how the account stands again:

Dr.	*Cr.*
To the use of five acres of cotton land.	By the use of one-eighth of an acre of food land.

It is obvious that nearly the whole of these bales are swallowed up in freights, charges, commissions, &c., and equally obvious that these charges consist almost altogether of food, an article which the planter can supply in almost unlimited quantity. Could these charges, occurring between the planter on the one side and the weaver and the twister on the other, be saved, the planter would obtain more than one bale of cloth for two of cotton. To accomplish this there is but

* B. Smith, Esq., one of the wealthiest planters in the South-west, told us that it cost him $70 an acre to *clear and prepare* heavy-timbered land for cotton on the Mississippi bottom.

one mode of proceeding, and that is to persuade (by taking measures to make it the interest of its owners) the *machinery to come to the cotton*, and thus obviate the necessity for sending the cotton to the machinery. At present we seem to be pursuing the same course that would be pursued by the man who should expend hundreds of thousands of days of labor in clearing and cultivating land for the production of wheat, and then wasting two-thirds of it on the road to and from the distant mill, for want of the application of three or four thousand days of labor to put up a mill on his own land. A grist-mill costing 5,000 days of labor will grind all the grain produced upon land that has cost 200,000, and perhaps 500,000 days of labor to place it in its existing condition; and yet the man above referred to, with such a force and plantation, wastes more days annually than would build such an one. So is it with our planters and farmers. We see in every little community that mills speedily rise for the conversion of grain into flour, and are satisfied with one-eighth toll; and so we see in every neighborhood, where there are timber and a little water-power, saw-mills are got up for converting lumber into boards; and with each such operation, flour and boards are obtained at less cost of labor, and the farmer has to give less of wheat, and of timber, to have them converted into flour and boards. What would the wheat-grower say who should have to give five bushels for getting one back in flour*—and what should the cotton-grower say to getting back one bale of cotton in the form of cloth? Let him reflect on this, and then answer the following one: Why should not every community of somewhat larger size have in like manner its own place for converting cotton into cloth? Could that be done, the planter would obtain half the cloth yielded by his cotton.

The latter will at first view probably deny this. He will say: If I sell my cotton to go to Manchester, it will produce me five cents. If I sell it to the manufacturer on the ground, he will give me no more. If I buy English cloth, it will cost me ten. If I had a manufacturer on the ground, I should pay the same. So he might for a time; but the manufacturer would make large profits, and competition would speedily arise, and then he would have his cloth on the ground as cheaply as he could buy it in Lowell, and here would be one saving. This, however, is not all. Let the planter look around and see how much of the labor of his neighborhood is wasted for want of the demand that would be produced by the vicinity of the factory. Then let him reflect upon the advantage to be derived from having, in that factory, a place of employment throughout the year, of the persons who might, in case of need, aid him in his picking, and thus save for him the labor that is now lost on cotton wasted in the field, or overtaken there by frost. Let him consider these things, and he will probably find that the loss in them alone is equal to the value of the labor required for the conversion of all the cotton of the neighborhood into yarn. If they could be saved, and he could thus, with the same labor, send yarn to market instead of cotton, he and his neighbors would be great gainers by the operation.

Having done this, let him look to the price at which he sells his corn and see what would be the difference to him if he had a market on the ground in consequence of the conversion of some of his neighbors into mechanics, mill operatives, &c. Instead of remaining poor on the produce of little pieces of land,

* In some places in Virginia—in Rappahannock, for instance—the farmer does pay as much as one barrel to get four transported to Fredericksburgh, apparently not stopping to calculate at what price and what yield per acre that becomes a losing game, and apparently not reflecting that while they pay 25 cents for transporting one dollar's worth of *wheat* they could transport the same weight, or fifteen dollars' worth of wool—or $7 50 of cheese, or $18 worth of live beef—at the same cost!

they would obtain good wages, and consume double their present quantity, while producing none. He would at once save much of the cost of transportation. He would sell food at home instead of having to buy it, with cost of commissions and transportation from his own neighborhood added to it to increase its price at Manchester or Lowell, and all would be a great gainer by the operation.

Let him then look to his cleared land, and study what would be its value if all the manure yielded by his hay, and oats, and corn, and fodder, went back upon the land, instead of being wasted on the road, and if all of that yielded by his wheat and corn remained upon the ground instead of going to Lowell or Manchester, and see if he would not be a gainer by the operation.

Let him then look to his uncleared land, and calculate how much it would cost him to destroy the timber.* Let him then calculate the value of the timber, if the factory were near him, and if the blacksmith and the shoemaker, the hatter and the tanner, the bricklayer and the carpenter, wanted houses; and if a town were growing up around the mill, and its inhabitants wanting pork and meal, and milk and beef, and flour, and potatoes, and mutton, and see if he would not be a gainer by the operation.

Let him look to the quantity of land upon which this timber stands, and on which he is paying or losing interest. Let him then look to the quality of that land, and compare it with what he now cultivates. Let him calculate how many bushels of potatoes it would yield, and compare their value, when consumed upon the ground, with that of the 300 pounds of cotton now yielded by an acre, and see if he would not be a gainer by the operation.

Let him add all these things together and see if he would not save all the freights and commissions; even although he obtained no more for his cotton, and paid as much for his cloth. Let him see if he would not obtain the full value of his cotton, instead of, as now, obtaining but one-third of it.

The truth is, that the great cities and towns of the world are built up out of the spoils of the farmer and planter. Looking around here in New-York, or in Philadelphia, or Boston, it is not possible to avoid being struck with the number of persons who live by merely exchanging—passing from the producer to the consumer,—producing nothing themselves. Wagons and wagoners, carts and cartmen, boats and boatmen, ships and sailors, are everywhere carrying about cotton, and wool, and corn, and wheat, and flour, as if for the pleasure of doing it. The man of Tennessee sends his cotton to Manchester to be twisted. His corn goes along with it to feed the man who twists it. It leaves him worth twenty cents. By the time it is consumed by the Manchester spinner, it is worth, perhaps, a dollar. The laborer buys it at that price. The manufacturer gives him a dollar to pay for it, and he charges it to the cloth at $1 10. The corn and cotton become cloth, and the Tennessee man buys it back, paying —as we see by a New-Orleans paper—*five bales for one!* He can sometimes send his corn, but he can never send his potatoes, and the reason why he cannot is, that they are of the class of commodities of which the earth yields so largely that they will not pay freight. The only things he can raise for market are those of which the earth yields little, and that will therefore pay freight. He raises three hundred pounds of cotton, all which goes to market, bringing him back but sixty fashioned into cloth; returning nothing to the land of what it drew

* A planter of the highest respectability, informed us at Montgomery, that he had in vain offered $20 an acre to have 200 acres cleared for cotton. Why don't the planters of Montgomery unite to build a steam factory.

out of the land, whereas if he had consumers near him, he would raise almost as many bushels of potatoes, the manure for which would go upon the land to enrich it, and make himself rich. He could then afford to clear, and ditch, and drain, and cultivate the richest land, now covered with timber, or with water.

Why does he not do these things? Why does he not bring the consumer to his side? Why does he continue year after year, to send his grain, or cotton, to the distant mill, instead of bring once and forever, the mill to him? The reason may be found in the newspapers every day. Last year cotton manufacturers, wool manufacturers, and iron manufacturers were prosperous. Now they are stopping their work. Many are already ruined, and many more are likely so to be. Why is this? Does it arise out of any change in our own affairs? It does not. It arises out of changes abroad. Last year England made railroads, and consumption then was large. This year she does not make roads, and consumption is small. Last year we built factories and furnaces. This year manufacturers and furnace-builders are ruined. All of them would be ruined, had they not a Tariff of protection, inadequate as is that of 1846 to give them that protection that is needed to secure them against such changes. Prosperous they would now be had the Tariff of 1842 remained unaltered; and the thousands employed in them would have remained profitable customers for the farmers, instead of being driven over the country to become the rivals of the farmer, increasing the quantity of provisions of which there is already a redundance.

We may now readily see why the planter of South Carolina and Georgia, and Tennessee, has not the consumer near him: why he continues year after year, wasting his cotton and his corn on the road going to the mill, instead of bringing the mill to him. The whole system of trade, by which the cotton and the food are thus forced to go to the mill instead of the mill coming to them, is unsound and unnatural, and therefore irregular, unstable, and ruinous. Revulsions are and must be perpetual occurrences; and none can risk their means in factories or furnaces, but men who can afford to incur great risks for sake of exorbitant profits. The whole system is one of mere gambling, and so will it continue to be while the trade of the country remains thus liable to be deranged by changes in the action of foreign nations, over which we can have no control; and so long will the planter continue to give five bales of cotton for one of cloth. Whenever he shall determine to take for himself the protection necessary to enable him to bring the spinner and the weaver to his side, there to eat the corn, while converting the cotton into cloth, he will save all the vast expense of transportation to which he is now subjected: he will increase the market for his cotton at home, and he will obtain better prices for the cotton and the corn that he sends into the general market of the world. All this he will do when he shall have arrived at the conclusion that the question of protection, is in fact and in truth, one of *protection to the farmer and planter*, and not of protection to the manufacturer. The latter with his machinery can go where he will. The planter's land cannot change its place. The former will come to him, as the grist-miller does, all over the country, if he can be assured of adequate and uniform remuneration, and the freight and commissions will then be saved. If the manufacturer cannot safely do this: if he continue to be, as in past times he has been, forbidden by the fear of change in parties and party policy, he will continue to compel the planters' produce to come to him, and commissions and freights will continue expensive and wasteful as now they are.

Let the planter examine carefully the changes that have occurred in the

prices of cotton in the last twenty years, and see if they have not been produced by the perpetual revulsions of England. Let him look around him now, and see if the change under which he now suffers is not due to the fact that he employs for the sale of his great product, *a broker that become bankrupt every four or five years.* Throughout the world there exists at this moment a greater power of consumption than existed twelve months since; and yet cotton has fallen to little more than half, and that for no reason but that English banks and bankers, English manufacturers and merchants, have become bankrupt. Why should the American planter be longer dependent on them? All the cloth made out of our cotton will be wanted and used whether manufactured here or there, and will need as many consumers to be employed in the work of conversion. Why then should we not bring the machinery of conversion to the side of the wool and the cotton, instead of sending the wool and cotton three thousand miles to the mill, and thus abolish, forever, the necessity of depending upon this great broker, who fails so frequently. "Nothing," to use the words of the South Carolina Committee, on the scheme for reducing the quantity of cotton, "can have more disastrous effects upon planters, than this fluctuation from low prices to high and from high to low. All which is necessary" as they say in continuation, "to our prosperity is a diminution in our wants, and a near approach to certainty in the market value of cotton."

Such is the want of the whole country, The manufacturer wants some certainty, and therefore does he ask for protection against the endless and enormous fluctuations of England. The iron-master wants some certainty, that he will not be ruined by those fluctuations. The farmer wants some certainty, that the furnace or the mill in his neighborhood shall not be closed by the fluctuations of English policy. The cotton planter wants certainty. None can have it while England shall be continue the broker of the whole cotton and wool-growing world. Let the farmer and the planter unite, not on party, but on *American* ground, to bring the consumers, with their capital and machines at their sides, and protect them when there; and thus they will *protect themselves*, and all will have certainty.

By the following extracts, for which we are indebted to De Bow's Commercial Review, it will be seen that Georgia and Tennessee are both going ahead in the important matter of bringing the consumer to the side of the producer. What is to be the effect of the present revulsion in England on their infant manufactures, remains yet to be seen. The great factories at Lowell, admirably as they are managed, make no dividends. The great establishment at Fall River, the first in the Union for printing cloths, is ruined. Large establishments elsewhere have failed, and more are likely to fail, and we have our fears for those at the South. The natural consequence of this must be that no new factories will be built for some time, and thus the planter has his market at home diminished at the very moment when from the failure of his great broker abroad, and the consequent difficulty of selling his cotton, he has most reason to desire to see it increased, and so it must continue to be until he shall determine to take for himself such effectual protection as will enable him to entice the little and inexpensive loom to come and take its place by the side of the great and costly machine of production.

RESOURCES OF GEORGIA.—MANUFACTURES, &c.—Mr. Nisbit, whose able article on Georgia in the Southern Review, elicited so much applause—has lately made a report as Chairman of the Committee on Manufactures, in that State, from which we extract:

Georgia presents the greatest possible advantage as a manufacturing State. She has a large amount of unemployed capital and labor. She boasts a climate favorable for every kind of

enterprise and exertion. And then she occupies a geographical position which gives her ready access to the markets of the world, with her manufactured products.

But a few years have elapsed since the introduction of manufacturing into Georgia. Those few years have witnessed the initiative policy, its rapid advance, and its triumphant success. We have in successful operation several iron establishments, with large capitals and giving employment to some hundreds of operatives. These establishments are furnishing iron-ware of various kinds, cheap in price, respectable in quantity, and unexcelled in quality. They are also preparing to supply iron for machinery, agricultural implements, railroads, and all the uses of life. In the department of cotton manufacturing, your Committee have collected a few statistics, which they do not present as accurate, but approximating thereto. We know of thirty-two cotton factories in our State, in operation, or in progress of construction. There are employed in the buildings and working of these thirty-two factories, two millions of dollars. The number of hands engaged therein is near three thousand, and of persons directly receiving their support from the same, six thousand. The consumption of provisions and agricultural products (other than cotton) by these factories, is fully equal to three hundred thousand dollars per annum, at present prices. Their consumption of cotton per annum reaches 18,000 to 20,000 bags, and the value of manufactured goods turned out by them last year. fell nothing short of one and a half million of dollars. One-third of these manufactured goods were sold out of the State, mostly in the Northern markets, and partially in the Valley of the Mississippi—that illimitable field of consumption which lies open to the enterprise of our manufacturers.

MANUFACTURES IN GEORGIA AND TENNESSEE.—Georgia and Tennessee are destined to become the great manufacturing States of the South, if not of the Union, because they have not only greater resources in proportion to their population, but, being traversed in every direction by railroads and rivers, and having a double outlet, both to the Gulf and the Atlantic, they will possess unparalleled advantages in regard to both the foreign and domestic markets. If our people would display one-half the energy and enterprise of the Yankees, in a quarter of a century from the present time we could surpass the whole of New-England in wealth and population: indeed all that we now lack to develop that enterprise and energy is the estabishment of manufactories, and the more general introduction of machinery.

Let us compare for a moment the agricultural wealth of the two States named with that of New-England. Georgia and Tennessee have together a population of 1,694,000; the States of Maine, New-Hampshire, Massachusetts, Vermont, Connecticut and Rhode Island have 2,422,000 souls. Now let us see the relative products of the two sections as developed by the Census of 1840, and by more recent statistics:

	New-England.	Georgia and Tennessee.
Corn	11,943,000 bushels.	83,584,000 bushels.
Wheat	2,898,000 "	9,911,000 "
Potatoes	20,581,000 "	3,792,000 "
Rye	2,582,000 "	448,000 "
Oats	11,247,000 "	9,458,000 "
Buckwheat	1,097,000 "	
Total	50,348,000	107,194,000

From the same journal we take the following comparative view of South Carolina and Rhode Island:

MANUFACTURES FOR THE SOUTH—RHODE ISLAND AND SOUTH CAROLINA.—One great cause of the unproductiveness of our capital and labor is the want of diversion of them. In every country there is a kind of labor which experience proves to be the best and most productive of that country. In one, Agriculture should predominate; in another, Manufactures; in a third, Commerce; but in no one on the face of the globe has an exclusive attention to either of these branches been found the most profitable. It is the judicious combination of them all that makes a nation great, and prosperous, and happy. This is an old political doctrine; its antiquity, however, is no disparagement of its truth. For its illustration we shall go no farther than the history of our own country. And fortunately for our purpose, the last Census of the Government furnishes data upon which there can be no dispute.

If we divide the population of Rhode Island (138,830) and that of South Carolina (549,398) into their respective annual incomes, viz., into $13,001,223 for Rhode Island, and into $27,173,536 for South Carolina, it will be perceived that Rhode Island divides, as the yearly income of each of its inhabitants, $100, while South Carolina divides only $45. If you take out the black population in both States, and make the division only among the whites, Rhode Island will divide $119. while South Carolina will divide $101. These are startling facts. Why are they so? It will, perhaps, be said it is either because the people of Rhode Island are more industrious than our people, or are engaged in more profitable labor; or from both causes combined.

The first of these we are unwilling to grant. Naturally we believe there are no people more willing to work than ours, when only taught to see a profitable result to their labor.

The difference in the profits of the two States must be attributed, therefore, to some other cause. The labor of Rhode Island is diversified, ours is not. Let us see: there are engaged in

RHODE ISLAND.		SOUTH CAROLINA.	
Agriculture	1 in 6	Agriculture	1 in 3
Commerce	1 in 87	Commerce	1 in 301
Manufactures	1 in 5	Manufactures	1 in 57

Divide the population of the two States into families of five each: there will be 27,766 families in Rhode Island and 118,879 in South Carolina. Give to each family, and to the horses, cattle, hogs, and sheep attached to each, the amount of grain, potatoes and hay usually consumed by them, and it will appear that South Carolina will be deficient in a self-supply as much as a million and a half bushels, while Rhode Island will have a surplus of very nearly that amount. This arises from the fact that South Carolina has more horses and cattle to support than Rhode Island. Thus, they are in

RHODE ISLAND.	SOUTH CAROLINA.
½ a horse to a family of five.	1½ horse to a family of five.
1 cow	4 neat cattle .. ..
4 sheep	1 sheep .. ..
1 hog	7½ hogs .. ..
6½ of all kinds.	14 of all kinds.

Suppose them to be equal, and that both States have enough of wheat, rye, oats, barley, potatoes and hay to support their population and cattle, and the comparative incomes of the two States would stand thus:

	RHODE ISLAND.	SOUTH CAROLINA.
Manufactures	$8,640,526	$2,248,915
Commerce	1,294,957	2,632,421
Mines	162,410	187,608
Forests	44,610	549,626
Fisheries	659,312	1,275
Rice		1,514,772
Cotton		4,628,270
Total	$10,801,914	$11,762,986

From this estimate each inhabitant in Rhode Island, after feeding himself, will have over $99 for clothing and other expenses, while each one in South Carolina will have a fraction under $20.

The above Table also shows another fact of much importance. The manufactures of Rhode Island are more valuable than the cotton and rice of Carolina taken together. In other words, the labor employed in the one is more productive than in the other two.

It is a question, then, which comes directly home to us, "Is South Carolina less capable than Rhode Island of excelling in the same profitable labors?"

We have already combated that class of complainers who are eternally decrying the profits of agricultural labor; there is another class who elevate it too much—even to the exclusion of all other pursuits. Nothing is easier than to be so deceived. Such persons view the agricultural calling with a poetical eye and see in it nothing but pastoral beauty and happiness. Were this the occasion, no task would be more pleasant than to indulge in drawing a picture of the virtue, and excellence, and riches of a people thus engaged. As a rhetorical exercise it might afford entertainment; but the true economist, criticising the work, would pronounce it only a fancy picture, alike untrue to nature and to fact.

Besides this, the introduction of different manufactures among us would have an effect not less important to our Agriculture—we mean the great inland trade it would create. In every prosperous country the inland or indirect trade is far greater than its foreign or direct trade. In England or New-York, for instance, it is fifteen times greater. Consider, then, a new trade created for Carolina ten times greater than at present; consider for a moment the influence upon Agriculture—how much more certainty it would afford the merchant in the investment of his capital than in foreign risks; what a numerous class of workmen it would employ; the misery it would remove by giving business to the idle, and the content and happiness it would afford the complaining. Is not such a consummation devoutly to be wished for? [South Carolinian.

Such a consummation *is* most devoutly to be wished, but how is it to be obtained?

Of all the cotton-growing States, South Carolina is the one whose planters most need protection, because they are nearest to the great cause of disturbance. The manufacturer of Tennessee is protected by distance. He buys his cotton cheaper, and he can sell his cloth dearer, because of the difference of freight, and therefore it is possible that he may be enabled to go on, notwithstanding the oc-

currence of these unceasing and enormous revulsions. The manufacturer of South Carolina is not so protected, and the danger of ruin to those who may engage in converting the food and the cotton of that State into cloth, and thus diminishing the cost of the conversion, is immense. Of all the States of the South, this is the one that is best situated for manufacturing. She has more wealth at command than any other. Her citizens have always been large stockholders in *distant banks*, because at home the State was the great banker. By regulation she has thus driven abroad the wealth that should have been retained at home, and her citizens are now flying from poor lands that they have exhausted, leaving behind them the richest lands of the State untouched. Marl and limestone, the proper application of which would render her one of the richest States of the Union, abound throughout the State, yet men fly to Arkansas and Texas, abandoning their houses, their relatives, and their friends, because they cannot find near those homes a demand for the food that they could raise in such vast abundance on her rich and untouched soils.

South Carolina is the State that *of all others* most needs protection. It is the one that would, of all others, most profit by it. It is, nevertheless, the one, of all others, whose planters are most determined not to take for themselves that protection which would make her the Rhode Island of the South, and enable her to maintain that position in the Union which she is now so rapidly losing because of her increasing tendency to depopulation. The day cannot, we think, be far distant when she will open her eyes to the error of her policy.

Much as this article has been extended, the subject growing in interest as we contemplate it, we cannot close it without making the following brief extracts from Mr. Carey's remarkable and convincing work, "The Past, the Present, and the Future," to which we have elsewhere referred, and which every friend of Agriculture and the *real independence* of his country ought carefully to read:

What is the extent of indirect taxation upon the people of the United States by means of the system which keeps the producer and the consumer widely separated, may perhaps be estimated if we take into consideration the following facts:

1st. The labor annually expended in the construction of carts, and wagons, and ships, that would be unnecessary if the consumer and producer could be permitted to take their place by the side of each other, would produce as many mills and furnaces as would convert into cloth half the cotton and wool produced, and smelt the ore for making all the iron used in the Union. To the carts, and wagons, and ships, may be added the labor of horses and oxen and mules employed in the same wasteful work.

2d. The time lost by the persons employed in the work of unnecessary transportation and exchange; by those who are idle in whole or in part for want of a regular demand for labor; and by those who are on the road seeking for new places of residence; is more than would be required for the work of converting all the wool into cloth, and all the ore into iron.

3d. The labor that is now given to the work of cultivating poor soils yielding ten bushels to the acre, instead of rich ones that are capable of affording tons of food by aid of which poor soils might be enriched, would yield double the return could the consumer take his place by the side of the producer and thus save the manure that is now wasted.

4th. The labor that is now wasted in making and repairing roads through new States and Territories, and among scattered settlements in both old and new States, if applied to the improvement of old roads, would diminish annually, and largely, the cost of transportation of the products of those portions of the earth requiring to be exchanged.

It may safely be asserted that the labor of Man, as now applied, is, on an average, but half as productive as it would be were it possible for the consumer and the producer to be near neighbors to each other, and if so, it follows that the indirect taxation by aid of the colonial system is equal to the whole of the present product of the Union, which we have estimated at two thousand millions of dollars. If we wish evidence of the extent to which taxation is pushed by aid of this system, we need only to look to all the colonies of England throughout the world, Ireland, India, the West Indies, Canada, Nova Scotia, and South Africa, and we shall find exhaustion and depopulation universal, as it must continue to be wherever the power of self-protection has no existence.

NIAGARA FALLS SUSPENSION BRIDGE.

It is probably known to most of our readers who take an interest in such matters, that the Canada people have under contract and now in the course of construction, a railway, which is intended for high speed and heavy freight, from Windsor on the East shore of Detroit River, about a mile below the Falls. The distance is 228 miles.

From the eastern shore of Niagra, opposite the terminus of the Canada Railway, a railway through Lockport along the Erie Canal to Rochester, is in the course of construction. Both of these roads, it is said, will soon be finished. They are, however, separated by the mighty Niagara, which runs between them in a gorge more than two hundred feet deep, with nearly perpendicular banks, and its waters are entirely impassable, owing to rapids tumbling over a rocky bottom on a great descent through which no water-craft ever attempted to cross.

To remedy this difficulty, some enterprising gentlemen of Western New-York, and Canada, have set themselves about spanning the river from railroad to railroad with a bridge, to be suspended on wire cables, of sufficient strength to cross railroad trains, as well as carriages and horses, and the work is already under way, under the superintendence of Charles Ellet, Jr., Engineer. To effect this, they are erecting two towers on each side of the river, built of substantial masonry, about sixty feet high above the rocky banks. Over the tops of these towers sixteen wire cables, four inches in diameter each, are to be stretched and anchored into the rock and fastened in the rear of the towers. These cables will weigh twenty-seven tons each, and will possess a strength equal to the support of six thousand five hundred tons weight.

From these cables thus extending across the river, the floor of the bridge is to be suspended on a level with the brow of the banks; and cars, carriages and passengers will enter upon the floor of the bridge between the towers. There will be two footways on the bridge, of four feet width each; two carriage-ways of 7½ feet each, and a railroad track.

The floor of the bridge will be two hundred and thirty feet above the water, and in full view of the Falls above and the whirlpool below, and the bed of the river between; thus adding artificial sublimity to Nature's grandeur, and making each contribute to the other. The expense of this bridge will be about two hundred thousand dollars, and the grandeur of the work, and the attractions it will present at this great resort of the curious and the fashionable, would seem to form sufficient inducement for the outlay.

But such was not the inducement. The gentlemen who have undertaken it—like most of our enterprising countrymen—are practical and utilitarian. Lakes Erie and Ontario are about thirty-six miles apart—joined by the noble Niagara, passable any time at only a few points, and sometimes passable nowhere between the two lakes on account of floating ice. On both sides of the river is a thick population of Anglo-Saxons, carrying on constant intercourse. To facilitate this, and annex the two countries, and join their railways, they have set themselves to erecting this stupendous and seemingly impracticable structure. Western New-York desires to avail herself of the transit of the Canada trade

through the State and take its advantages. Canada is desirous of giving the Western States a passage through her dominions and to avail herself of whatever advantages may be gained by it.

Michigan, Illinois and Wisconsin desire a winter trade, and are restless at being locked up so many months in the year by ice from the Atlantic, and they desire also to have a shorter, quicker, and safer passage to the East than round through Lake Erie. And the farmers in Canada and the interior of the upper States are anxious to send down their produce, and would not like to be stopped by this impassable gorge in the river. Our readers will therefore see that the public interest of vast multitudes is very deeply concerned in this enterprise, and though presenting great inducements to the curious and fanciful, it is, nevertheless, a work of vast utility, in which the benefit of millions is concerned.

The prime mover of this magnificent display of civil engineering and combination of mechanical powers, is our worthy fellow-citizen LOT CLARK, Esq., heretofore distinguished in the public annals of his country; but certain now to be more widely and longer known by this momentous enterprise.

This suspension bridge seems worthy to stand in view of that stupendous display of the grandeur of Nature, the Falls of Niagara; the sight of which so well rewards the pilgrims who come annually from all quarters of the world to contemplate and admire it.

No reader of good sense—and we trust we have none others—will need to be reminded of the inseparable connection which everywhere exists between the *Agriculture* of a country, and its *roads and bridges*, which serve—according as they are more or less perfect—to facilitate and cheapen transportation and exchanges between rural and manufacturing industry.

EXPERIMENTS ON DEPTHS OF SOWING.—October, 23; Planted, at 3 inches distance, 16 seeds of Wheat, taken from one fine ear. Two were deposited at exactly 1 inch deep; two at 2 inches deep; two at 3 inches deep; two at 4 inches deep; two at 5 inches deep; two at 6 inches deep; two at 7 inches deep; and two at 8 inches deep. The land was in good heart, and finely pulverized or meliorated 1 foot deep, on purpose for the experiment; the situation facing the south, and in the middle of an open field. At harvest the result was as follows, viz: Those deposited at 1 inch deep were almost turned out of the ground, had tillered very little, and the ears were few, and the grain lean. Ditto deposited at 2 inches, tillered largely, and stood upright on the ground, were well filled, and excellent grain. Ditto deposited at 3 inches deep, tillered more largely, and had stronger straw and larger ears, ripened well and seasonably. Ditto deposited at 4 inches, nearly the same. Ditto deposited at 5 inches, did not tiller so much as those deposited at 4 inches, neither did they produce such strong stalks, nor so much grain. Ditto deposited at 6 inches deep, tillered less, and did not ripen so well as the above. Ditto deposited at 7, produced only one stalk; it shriveled to nothing before midsummer. Ditto deposited at 8 inches deep, never came above ground. The result of this experiment, and a variety of others, made at different times on different seeds, and in different soils, the particulars of which I shall not here trouble you with, give me reason to conclude that from 2 inches deep to 5 is the greatest latitude which this operation admits of. The lightest soils and driest seasons require the greatest depths to be used; and wheat, of all the grains, admits of being deposited deepest. When the soil has been lately broken up, and rich, or is a very fine sandy loam, &c. full of manure (and withal a dry seed-time), I have found 4 inches the best depth; but in general, 3 inches, in my experiments, has answered best. [Clarke's Theory of Husbandry, 1781.

KEEPING BEEF FRESH.—Combe says the ribs will keep longest, or five or six days in summer, the middle of the loin next, the rump next, the round next, and the brisket the worst, which will not keep longer than three days in summer.

LETTER XV.

ANATOMY OF THE SHEEP (Continued)—DISEASES AND THEIR TREATMENT.

The Thoracic Viscera...The Diaphragm...The Thorax...The Heart, Arteries, Capillaries, and Veins...The Lungs...The Windpipe, Larynx and Pharynx...The Thyroid and Parotid Glands...The Head and its structures...The Brain...The Nerves...The Teeth...The Lower Extremities...The Biflex Canal...Febrile diseases—those of Europe which are not common here...Ophthalmia—popular remedies—proper treatment...Pneumonia—symptoms—Mr. Spooner's prescription for...Bronchitis—symptoms—treatment ...Catarrh—ordinarily not dangerous—preventives...Malignant Epizoötic Catarrh—prevalence in the Northern States—character of the disease has not been understood—prevalence in author's flock—how produced—symptoms—post-mortem appearances—character of the disease ascertained—Nosology—treatment, &c...The Rot—its diagnosis—post-mortem appearances—description of the Fluke—causes of the Rot—treatment...Diarrhea—cause—diagnosis—treatment...Dysentery—cause—difference between it and diarrhea—treatment...Garget—seat and origin of the disease—treatment...Nervous Diseases...Apoplexy—unrecognized cases of it—several cases detailed—symptoms—treatment...Phrenitis...Tetanus...Epilepsy...Rabies...Neither of them common in this country...Paralysis—symptoms—treatment...Colic—symptoms—attributed to intussusception—true cause—treatment.

THE THORACIC VISCERA.

Among these, for convenience, I will include the diaphragm.

The Diaphragm.—The diaphragm or midriff is a muscle extending entirely across the inner cavity of the body, separating the abdomen from the thorax or chest. Its structure is unique, and beautifully adapted to the functions it has to perform. Its outer margin is muscular, giving it the necessary power of contraction, while toward the middle it changes into a transparent tendonous substance. Through this tendonous substance pass the œsophagus, the *aorta*, and the *vena cava*.

If the parts of the diaphragm which immediately surround these vessels had been muscular, every contraction of the former in the act of respiration, would have compressed the latter, and therefore interfered with the passage of the food to the stomach, and the circulation of the blood. In a state of rest the diaphragm is convex toward the thorax. When contracted and flattened, therefore, it enlarges the cavity of the thorax, and air rushes into the lungs. Its alternate contractions and relaxations mainly produce the act of respiration or breathing.

The Thorax.—Without injuring the diaphragm, divide the sternum and brisket of the sheep longitudinally through the center, with a fine saw, and on pulling the lower extremity of the ribs slightly apart, the thorax will be disclosed in its natural arrangement. It consists of three cavities, formed by the doublings of the *pleura*, a thin serous membrane, which lines the whole interior of the chest. Two outer and larger cavities (the right one being the largest), contain the lungs—a third and smaller one, lying between the posterior portions of the former, contains the heart. The œsophagus passes through the upper portion of the thorax, over the lungs and heart, and between them and the spine, to the lower portion of the neck.

The Heart, Arteries, Capillaries, and Veins.—With the size and general appearance of the heart, all are familiar. Enclosed in a membraneous sac—the *pericardium*—it hangs suspended by its superior attachments to the roof of the thorax, its lower extremity nearly reaching to its floor, and pointing toward the left side. The heart has two cavities on each side, termed *auricles* and *ventricles*. The chyle and venous blood are

discharged into the right auricle, and thence into the right ventricle. By the contraction of the latter, its contents are forced through the pulmonary artery into the lungs. The blood having been purified in the lungs, is returned to the left auricle; thence into the left ventricle; and it is then forced into the aorta, or large artery which supplies, by its different branches, all parts of the system with blood. Each compartment of the heart is furnished with appropriate valves to cause the blood to be forced *forward* in its regular course, by the muscular contractions of this viscus. These contractions are the result of an inherent and independent power.

The contractions of the heart force the blood into and along the arteries. When this force begins to be spent as the distance from the heart increases, it receives aid from the action of the muscular coat of the arteries themselves, which forces along the blood to their utmost extremities.

The arteries continue to branch off into more and more minute divisions as they recede from the heart, until the tubes are much less in diameter than the finest hair. These, *capillaries* as they are called, open by exceedingly minute mouths in every part of the frame, for the deposition of those secretions from the blood which maintain the vitality and healthy action of the parts, supply the animal waste, &c.

The capillaries, commencing their return toward the heart, constantly reünite, forming larger tubes which are called *veins*, which bring back such portions of the blood carried out by the arteries, as has not been expended in nourishing the system. The blood now deprived of its oxygen, and loaded with carbon, is unfit for farther circulation until re-purified in the lungs. It is of a darker color than the arterial blood. It is no longer urged on by the contractile power of the tubes through which it flows, but by the partial vacuum formed in the right auricle (as at each contraction it forces its contents into the right ventricle,) and by atmospheric pressure.

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The Lungs.—The lungs are bodies composed of separate minute air-cells, communicating with the *bronchial tubes*, or subdivisions of the windpipe. They also contain many arteries, and veins. On the delicate membraneous walls of the air-cells the venous blood is carried by innumerable tubes so thin as to permit their contents to be acted upon by the atmospheric air which fills the cells at every inspiration. Here the blood gives off its carbon, and receives oxygen from the air, and thus is prepared for its return to the heart, and to be again sent through the system.

The right lung is somewhat larger than the left, and both fill their respective cavities when inflated. They are entirely free from any attachment to the pleura—the membrane which lines the ribs—when in their natural state. When the animal has been bled to death, the lungs are of a light color; but if the animal has died with all its blood in it, their color resembles that of the liver. This can, however, be readily distinguished from *hepatization*—the result of certain diseases—as will be hereafter shown.

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The Windpipe, Larynx, Pharynx, &c.—The bronchial tubes constantly uniting as they approach the anterior portion or root of each lung, finally form a single large tube, as they make their exit from each lobe, and these, uniting into one, form the windpipe. This is a well known cartilaginous tube which passes out of the chest between the first two ribs, and ascends on the front part of the neck. It unites with the larynx, which continues the air passage from the lungs to the mouth. The œsophagus leaves the chest close beside the windpipe, and ascends the neck on the

left side of the latter. It communicates with the pharynx, which communicates with the mouth. The food on being swallowed enters the pharynx or food bag, which is directly above the larynx—so that the food traverses the entrance to the latter. It is deterred from entering the windpipe by the *epiglottis*, a triangular lid or valve which projects upward from the floor of the passage, and which closes upon and covers the *glottis*, or entrance into the windpipe, when any substance more dense than air comes in contact with it in its downward passage.

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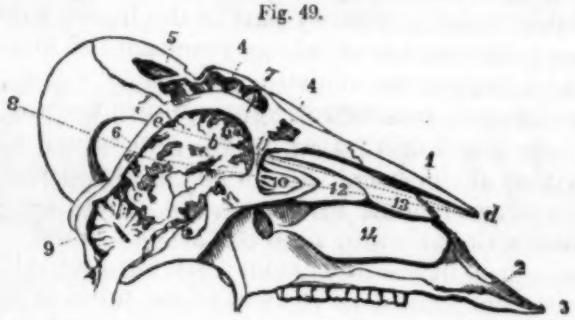
THE THYROID AND PAROTID GLANDS.—The Thyroid glands are located on each side of the trachea. The parotid glands are situated immediately below the ear, behind the angle of the lower jaw. There are certain other glands situated beneath the lower jaw, not necessary here to be referred to.

THE HEAD AND ITS CONTENTS.

Fig. 49.



BONES OF THE HEAD.

1. The nasal bone.
2. The upper jaw bone.
3. The intermaxillary bone, which supports the pad which supplies the place of upper front teeth.
4. 4. The frontal sinus.
5. Cavity or sinus of the horn, communicating with the frontal sinus. It is here shown by the removal of a section of the base of the horn.
6. The parietal bone.
7. The frontal bone.
8. Vertical section of the brain.
9. Vertical section of the cerebellum.
   a. The cineritious portion of the brain.
   b. The medullary portion.
10. The ethmoid bone.
11. The cribriform or perforated plate of the ethmoid bone. "It separates the nasal cavity from the brain; it is thin almost as a wafer, and pierced by numerous holes, through which the olfactory nerve penetrates, in order to spread itself over the inner part of the nose."
12. The lower cell of the ethmoid bone.
13. The superior turbinated bone.
14. The inferior turbinated bone.
17. The sphenoid bone.

The above cut, copied from Youatt, gives, with the subjoined explanations, a sufficient description of most of the structures of the head. Some, however, demand a little more particular description.

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THE BRAIN.—The brain of the sheep is smaller in proportion than that of Man, but is shaped so nearly like the latter, and so closely resembles it in its general structure and conformation, that it furnishes the medical student with a good substitute for the brain of the human subject! The brain is invested in a membrane called the *pia mater*. The cranium or skull is lined by the *dura mater*, and between this and the former there is a delicate membrane called the *tunica arachnoides*.

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THE NERVES.—Ten pair of nerves arise from the brain, and thirty pair from the spinal cord. These supply the sense of seeing, hearing, tasting, smelling, feeling, &c. &c.; and a portion of them, termed nerves of mo-

tion, communicate that volition of the brain to the different parts of the system, which produces motion. A description of these various nerves, or even an enumeration of them, would be of no *practical* benefit in a mere popular veterinary treatise.

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THE TEETH.—The sheep has 24 molar teeth, and eight incisors. The latter are confined to the lower jaw, being opposed to a firm, hard, elastic pad or cushion on the upper jaw. The incisors are *gouge*-shaped—*i. e.*, concave without and convex within—which enables the sheep to crop the herbage closer to the ground than our other domestic ruminant, the ox.

The lamb is born without incisor teeth, or it has but two. In three or four weeks, it has eight small, shortish ones, as represented in fig. 50.—

Fig. 50. Fig. 51. Fig. 52.

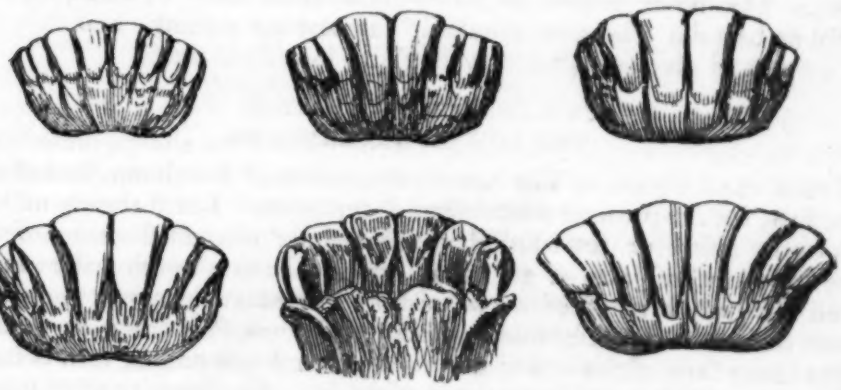

Fig. 53. Fig. 54. Fig. 55.

When not far from a year old—though sometimes not until fourteen, fifteen, or even sixteen months old—the two central incisors are shed, and their place is supplied by two longer and broader teeth, as in fig. 51. The sheep is then termed, in this country, a *yearling*, or *yearling past*. Two of the "lamb teeth" continue to be annually shed and their places supplied with the permanent ones until the sheep becomes "*full-mouthed*." Fig. 52 presents the teeth of a two-year-old-past—fig. 53 of a three-year-old-past—fig. 55 of a four-year-old-past. The four-year-old-past is, in reality, nearly or quite five years old, before it obtains its whole number of *fully-grown* permanent teeth. The two-year-old and three-year-old also about reach their next year before their additional incisors are *fully grown*.—Hence, the English writers all speak of two broad teeth (meaning fully-grown ones) as indicating the age of two years; four broad teeth, three years; six broad teeth, four years; and eight broad teeth, or full-mouthed, five years. I prefer the English arrangement, as more accurate, but the other is the common one in the Northern and Eastern States; and, as it is a matter of little practical consequence, it will here be adhered to.

Fig. 54 gives an *inside* view of the incisors of a three-year-old-past—an *outside* view of which is given in fig. 53. The two remaining lamb teeth are here shown, which in the outside view are concealed by the last pair of permanent teeth. From their being thus concealed, the three is often mistaken for the four-year-old-past, by those who do not *count* the permanent teeth.

At six years old, the incisors begin to diminish in breadth. At seven they have lost their fan-like shape, being equilateral, long, and narrow.—At eight, they are still narrower; and this year or the next, reversing the flaring or divergent position in which they are shown in fig. 55, they begin

to point *in* toward the two central ones. Their narrowness and inward direction increases for a year or two more, when they begin to drop out. Sheep fed on turnips or other roots, lose their teeth earlier than those which only receive grain, hay, &c. in winter. At twelve years old, the incisors are usually gone with the exception of one or two loose ones. And here let me remark that when the incisors are reduced to one or two, they should always be twitched out with a pair of nippers. They are useless for the purpose for which they were formed, and they prevent that contact of the lower *gum* with the pad above, which is *now* the only substitute for teeth in cropping grass. When all the incisors are gone, the gums of the lower jaw rapidly harden, and I have known ewes to live for years, keep in fair condition and rear lambs, without an incisor tooth in their heads!

The above remarks are more particularly applicable to the Merino breed. The other breeds, so far as my acquaintance extends, lose their teeth, or become "broken-mouthed" somewhat earlier; and they dwindle away and die soon after they begin to lose their teeth.

THE LOWER EXTREMITIES.

THE BIFLEX CANAL.—The lower extremities of the sheep, including the legs, feet, &c., require no anatomical description. I will simply call attention to the biflex or interdigital canal, the nature and diseases of which have been the subjects of so many errors. It is a small orifice opening externally on the front of each pastern immediately above the cleft between the toes. It bifurcates within, a tube passing down on each side of the inner face of the pastern, winding round and ending in a *cul de sac*.

The use of this canal is a matter of doubt. Mr. Spooner thinks the hair always found in it is "*excreted* from the internal surface," and "from the smallness of the opening it cannot escape, or rather is detained for a useful purpose." He continues:

"The use of this canal, thus stuffed with hair, is self-evident. We have mentioned the great motion possessed by this pastern joint, which is so great as to threaten to chafe the skin by the friction of one side against the other. It is to prevent or ward off this friction that these biflex canals, or rather *hair-stuffed cushions*, are provided."

In my judgment, this is a very far-fetched conclusion, and Mr. Youatt's is little more satisfactory. Diseases originating in this canal are sometimes confounded with hoof-ail; and the canal, or a portion of it, is often dissected, or rather *mangled* out by ignorant charlatans in pursuit of an imaginary *worm*, which, they induce the credulous farmer to believe, originates the hoof-ail! The hoof-ail proper has nothing to do with, nor do its characteristic lesions extend to this canal.

FEBRILE DISEASES.

Simple inflammatory, malignant inflammatory, and typhus fevers often devastate the flocks of Europe; but they seem scarcely to be known in the United States, and are included in no American work on the diseases of sheep which has fallen under my eye.

The same remark applies to phrenitis (inflammation of the brain), pleuritis (inflammation of the membrane which lines the thorax), gastritis (inflammation of the stomach), enteretis (inflammation of the intestines), cystitis (inflammation of the bladder), laryngitis (inflammation of the larynx), and several other inflammatory diseases.

OPHTHALMIA.—Ophthalmia, or inflammation of the eye, is not uncommon

in our country, but is little noticed, as in most cases it disappears in a few days, or, at worst, is only followed by *cataract*. The cataract being usually confined to one eye does not appreciably affect the value of the animal, and therefore has no influence on its market price. As a remedy for this disease, Mr. Grove recommended blowing pulverized *red chalk* into the inflamed eye! Others squirt into it tobacco juice, from that ever ready reservoir of this nauseous fluid, their mouths! I apprehend that all such prescriptions are far worse than nothing.

Conceiving it a matter of humanity to do *something*, I have in some instances drawn blood from under the eye, bathed the eye in tepid water, and occasionally with a weak solution of the sulphate of zinc combined with tincture of opium. These applications diminish pain and accelerate the cure.

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Pneumonia.—Pneumonia, or inflammation of the lungs, is not a common disease, in the Northern States, but undoubted cases of it sometimes occur, after sheep have been exposed to sudden cold—particularly when recently shorn. The adhesions occasionally witnessed between the lungs and pleura of slaughtered sheep, betray the former existence of this disease—though in many instances it was so slight as to be mistaken, in the time of it, for a hard cold. The sheep laboring under pneumonia is dull, ceases to ruminate, neglects its food, drinks frequently and largely, and its breathing is rapid and laborious. The eye is clouded—the nose discharges a tenacious, fetid matter—the teeth are ground frequently, so that the sound is audible to some distance. The pulse is at first hard and rapid—sometimes intermittent; but before death it becomes weak. During the hight of the fever, the flanks heave violently. There is a hard, painful cough during the first stages of the disease. This becomes weaker, and seems to be accompanied with more pain as death approaches.

After death, the lungs are found more or less *hepatized*, *i. e.* permanently condensed, and engorged with blood, so that their structure resembles that of the *hepar*, or liver—and they have so far lost their integrity that they are torn asunder by the slightest force.

It may be well in this place to remark that when sheep die from any cause *with their blood in them*, the lungs have a dark hepatized appearance. But whether actually hepatized or not, can be readily decided by compressing the windpipe, so that air cannot escape through it, and then between such compression and the body of the lungs, in a closely fitting orifice, insert a goose-quill or other tube, and continue to blow until the lungs are inflated so far as they can be. As they inflate, they will become lighter colored, and plainly manifest their cellular structure. If any portions of them cannot be inflated, and retain their dark, liver-like consistency and color, they exhibit hepatization—the result of high inflammatory action—and a state utterly incompatible, in the living animal, with the discharge of the natural functions of the viscus.

With the *treatment* of pneumonia, I have but little personal experience. In the first or inflammatory stages of the disease, bleeding and aperients are clearly called for. Mr. Spooner recommends "early and copious bleeding, repeated, if necessary, in a few hours . . . this followed by aperient medicines, such as 2 oz. of Epsom salts, which may be repeated in smaller doses if the bowels are not sufficiently relaxed. . . . The following sedative may also be given with gruel twice a day:

Nitrate of potash	1 drachm.
Digitalis, powdered	1 scruple.
Tartarized antimony	1 do.

The few cases I have seen have been of a sub-acute character, and would not bear treatment so decidedly and *I* think *dangerously* antiphlogistic.

Mr. Youatt remarks:

"Depletion may be of inestimable value during the continuance—the short continuance—of the febrile state; but excitation like this will soon be followed by corresponding exhaustion, and then the bleeding and the purging would be murderous expedients, and gentian, ginger, and the spirit of nitrous ether will afford the only hope of cure."

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Bronchitis.—It would be difficult to suppose that where sheep are subject to pneumonia they would not also be subject to bronchitis—which is an inflammation of the mucous membrane which lines the bronchial tubes—the air-passes of the lungs. I have seen no cases, however, which I have been able to identify as bronchitis, and have examined no subjects, after death, which exhibited its characteristic lesions. Its symptoms are those of an ordinary cold, but attended with more fever and a tenderness of the throat and belly when pressed upon.

Treatment.—Administer salt in doses from 1½ to 2 oz., with 6 or 8 oz. of lime-water, given in some other part of the day. This is Mr. Youatt's prescription.

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Catarrh.—Catarrh is an inflammation of the mucous membrane which lines the nasal passages—and it sometimes extends to the larynx and pharynx. In the first instance—where the lining of the nasal passages is alone and not very violently affected—it is merely accompanied by an increased discharge of mucus, and is rarely attended with much danger. In this form it is usually termed *snuffles*, and high-bred English mutton sheep, in this country, are apt to manifest more or less of it, after every sudden change of weather. When the inflammation extends to the mucous lining of the larynx and pharynx, some degree of fever usually supervenes, accompanied by cough, and some loss of appetite. At this point the English veterinarians usually recommend bleeding and purging. Catarrh rarely attacks the American fine-wooled sheep with sufficient violence in *summer*, to require the exhibition of remedies. I early found that depletion, in catarrh, in our severe *winter* months, rapidly produced that fatal prostration, from which it is next to impossible to recover the sheep—entirely impossible, without bestowing an amount of time and care on it, costing far more than the price of any ordinary sheep.

The *best* course is to *prevent* the disease, by judicious precautions. With that amount of attention which every prudent flock-master should bestow on his sheep, the hardy American Merino is little subject to it. Good, comfortable, but *well-ventilated* shelters, constantly accessible to the sheep in winter, with a sufficiency of food regularly administered, is usually a sufficient safeguard; and after some years of experience, during which I have tried a variety of experiments on this disease, I resort to no other remedies—in other words, I *do nothing* for those occasional cases of ordinary catarrh which arise in my flock, and they never prove fatal.

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Malignant Epizootic Catarrh.—Essentially differing from the preceding in type and virulence is an epidemic, or, more properly speaking, an epizoötic, malady, which as often as once in eight or ten years sweeps over extended sections of the Northern States, destroying more sheep than all the other diseases put together. It usually makes its appearance in winters characterized by rapid and violent changes of temperature. The Northern farmers speak of these as the "bad winters" for sheep—frequently without assigning any name to the malady. Others term the lat-

ter "*The Distemper*," and others again call it the "*Grub in the Head*," attributing the evil exclusively to the presence of these parasites. The latter, as I shall hereafter show, is an entirely erroneous hypothesis.

The winter of 1846–7 was one of these "bad winters," and the destruction of sheep in New-York, and some adjoining States, was very extensive. Some flock-masters lost half, others three-quarters, and a few seven-eighths of their flocks. One individual within a few miles of me lost five hundred out of eight hundred—another nine hundred out of one thousand! But these *severe* losses fell mainly on the holders of the delicate Saxon sheep, and perhaps, generally, on those possessing not the best accommodations, or the greatest degree of energy and skill.

I lost about fifty sheep during this winter, and never having seen any description of the pathology of this disease, its diagnosis, its lesions—or, in short, any attempt to ascertain its specific character or proper classification in our ovine nosology—I shall attempt to supply some of these omissions. Not dreaming then of a publication of this kind, my notes were only taken for private reference, and were not as full as they should be for a veterinary treatise. I *might* supply some of these omissions accurately from *recollection*, but do not consider it proper thus to *endanger* the accuracy of records, which as far as they go, I think may *now* be *implicitly relied on*. My post-mortem examinations were made at intervals snatched from other pressing engagements. This fact, and certain preconceived views—which I subsequently found *erroneous*—prevented me from making those examinations, and more particularly the *records* of them, as minute and extended as could be wished. I then sought only to convince *myself* of the true nature and character of the disease.

In detailing the results of my experience in the premises, I conceive it a duty to frankly state the *whole facts*. The records of *mismanagement* and *error*, are often as useful, nay, more so, than those of successful management, and it is a pitiful pride which prevents any man, who pretends to communicate information to the public, from giving that public the benefit of his examples which are to be *avoided*, as well as those which are to be *followed*.

Up to February, my sheep remained apparently perfectly sound, and they were in good flesh. Each flock had excellent shelters, were fed regularly, etc., and although sheep were beginning to perish about the country, my uniform previous impunity in these "bad winters" led me to entertain no apprehensions of the prevailing epizoötic. About the first of February, my sheep went into the charge of a new man, hired upon the *highest recommendations*. A few days after, I was called away from home for a week. The weather during my absence was, a part of the time, very severe. The sheep-house occupied by one flock containing one hundred sheep, was, with the exception of two doors, as close a room as can be made by nailing on the wall-boards vertically and without lapping, as is common on our Northern barns.* One of the doors was always left open, to permit the free ingress and egress of the sheep, and for necessary ventilation. A half dozen ewes which had been untimely impregnated by a neighbor's ram, were on the point of lambing, and it being safer to confine the ewes in a warm room over night, the shepherd, instead of removing them to such a room, confined the whole flock in the sheep-house every night, and rendered it warm by closing *both doors!* After two or three hours, the air must have become excessively impure. On entering the sheep-house, on my return, I was at once struck with the fetid, highly offensive smell. A change, too, slight but ominous, had taken place in the

* Boards in these cases shrink so as to leave slight cracks between them.

appearance of a part of the flock. They showed no signs of violent colds, I heard no coughing, sneezing, or labored respiration—and the only indication of catarrh which I noticed, was a nasal discharge, by a few sheep. But those having this nasal discharge, and some others, looked dull and drooping; their eyes ran a little—were partially closed, the caruncle and lids looked pale—their movements were languid—and the shepherd complained that they did not eat quite so well as the others. The pulse was nearly natural—though I *thought* a trifle too languid.

Not knowing what the disease was—and fully believing that depletion by bleeding or physic was not called for, let the disease be what it would. I contented myself with thoroughly purifying the sheep house—seeing that the feeding, etc.,* was managed with the greatest regularity—and closely watching the farther symptoms of disease in the flock. In about a week, the above described symptoms were evidently aggravated, and there had been a rapid emaciation, accompanied with debility, in the sheep first attacked. The countenance was exceeding dull and drooping—the eye kept more than half closed—the caruncle, lids, &c. almost bloodless—a gummy yellow secretion below the eye—thick glutinous mucus adhering in and about the nostrils—appetite feeble—pulse languid—and the muscular energy greatly prostrated. Nothing unusual was yet noticed about their stools or urine.

I now had all the diseased sheep removed from the flock, and placed in rooms the temperature of which could be easily regulated.

I commenced giving slight tonics and stimulants, such as gentian, ginger, etc., but apparently with no material effect. They rapidly grew weaker, stumbled and fell as they walked, and soon became unable to rise. The appetite grew feebler—the mucus at the nose, in some instances, tinged with dark grumous blood—the respiration oppressed, and they died within a day or two after they became unable to rise.

I proceeded to make some post-mortem examinations, which I shall here detail, although, as I have before remarked, they are extremely imperfect. I was at first inclined to suspect that the primary disease was one of some of the abdominal or thoracic viscera, and this impression was confirmed by the abnormal condition of these viscera in the first subjects examined. I therefore improperly confined my attention to these, and some of the external tissues, *without any examination of the interior organs of the head and neck.* I shall give my notes verbatim as they were taken down at the time, whether the appearances detailed have, as I *now believe*, any connection with the fatal disease or not.

Case 1st. Old sheep. Much emaciated—mouth and lips covered with yellow froth—yellow waxy matter under eyes—adhesive mucus in and about nostrils. On opening, external tissues appear healthy—two hydatids on omentum of the size of a walnut—gall-bladder enlarged and enormously distended with pale, and apparently not properly eliminated bile—gall-bladder slightly adhering to omentum—mesenteric glands enlarged—other abdominal viscera believed to be normal—fæces in rectum thought to indicate a constipated habit—stomachs rather empty. Thoracic viscera healthy.

Case 2d. Two years old. External appearances as in Case 1st, with the exception of the yellow froth about the mouth. External tissues healthy. Gall-bladder very small and nearly empty—bile pale and uneliminated—mesenteric glands enlarged—schirrous tumor at the junction

* They had been fed with bright hay three times a day, and turnips. As those affected as above did not eat their turnips well, I commenced feeding some oats, *in addition* to the turnips. I believed that a generous feed was called for, and I gave it.

of the cœcum and colon of the size of a butternut. Superior lobe of left lung adherent to pleura costalis—three lobes of right lung ditto, with slight traces of *recent* inflammation. Hydro-pericarditis—the pericardium slightly inflamed and containing something more than a gill of serum.

Case 3d. Old, and in lamb. External appearances and tissues as in Case 2d. Omentum dark-yellowish, or yellowish-brown by deposition of lymph, the result of inflammatory action—gall-bladder precisely as in Case 2d—tabes mesentrica or enlargement of the mesenteric glands, as in the preceding cases. Middle lobe of right lung slightly hepatized, and adherent to pleura costalis—hydro-pericarditis, (a gill of serum in pericardium.)

Case 4th. Yearling ram. External appearances and tissues as in preceding cases. Two small hydatids on omentum—gall-bladder as in two preceding cases—mesenteric glands as in preceding cases. Traces of diarrhea. Thoracic viscera healthy.

Case 5th. Lamb. External appearance as in preceding cases—omentum as in Case 3d, and small hydatid on it—gall-bladder as in three preceding cases—ditto of mesenteric glands. Thoracic viscera healthy.

Case 6th. Four-year-old ram, killed for examination, in the first stage of the disease. Yet strong, appetite good, in fair condition, and exhibited no particular external indications of disease except running at the eyes, a slight gummy deposition below them—and some mucus about the nostrils. Gall-bladder but little better filled than in preceding cases—mesenteric glands same as in preceding cases. Thoracic viscera healthy.

Remarks on Preceding Cases.—I had started on the supposition that the fatal disease would be found one of the lungs, consequent on catarrh. I thought it *might* prove a species of pneumonia, though some of the characteristic symptoms of that disease seemed to be wanting; but I believed it would rather prove to be phthisis pulmonalis, or pulmonary consumption. To the last disease, when it assumes the form of what is popularly called "quick consumption," it seemed to me to bear several striking analogies. But the post-mortem examinations above detailed, entirely overthrow these suppositions. Except in Case 2d, there were no manifestations of *recent* inflammation of the lungs. The adhesions in Case 3d, were evidently referable to a past date. In the other four cases, the lungs were in a healthy condition—exhibiting not a trace of hepatization, tubercles, ulcers, or other abnormal action! In Case 6th, where the disease was in its first observable and therefore inflammatory stage, *none* of the thoracic viscera presented a particle of inflammation!

Then what *was* the disease? It was evidently the same in the several cases, yet the lesions disclosed by post-mortem examination were very various. Hence, I was led to conclude that these lesions were the results of *symptomatic* disease, and that the *primary* one was not yet discovered.

The malady continued to spread. New cases occurred daily—it began to exhibit itself in my other flocks. It had manifestly put on the character of an epizoötic—or, if I may be permitted to coin a word, an en-zootic. I now gave orders to have every sheep removed from the several flocks, *as soon* as it should be attacked with disease. I also resolved on more extended post-mortem examinations. The following are the notes taken in the immediately succeeding cases.

Case 7th. Yearling. External appearance as in the preceding cases—external tissues normal—mesenteric glands slightly enlarged—gall-bladder of natural size, with good bile, and with the natural discolorations about it. Thoracic viscera healthy, with exception of pericardium, which exhibited traces of recent inflammation and contained a gill of serum

The thorax also contained considerable fluid, which escaped without admeasurement.

I now examined the bronchial tubes, the lower portions of the windpipe, œsophagus, &c., and found them all in an apparently healthy condition. Before tracing these passages to the throat, I removed the upper portion of the skull and carefully examined the brain and its investing membranes. All seemed in a perfectly normal state. I then made a longitudinal section down through the middle part of the whole head, as is shown in fig. 49, and *the seat and character of the fatal malady stood at once revealed!*

The mucous membrane lining the whole nasal cavity, highly congested and thickened throughout its whole extent, betrayed the most intense inflammation. At the junction of the cellular ethmoid bones with the cribriform plate, (in the ethmoidal cells,) slight ulcers were forming on the membraneous lining! The inflammation also extended to the mucous membrane of the pharynx, and say three inches of the upper portion of the œsophagus. Here it rather abruptly terminated.

Case 8th. Old, in lamb. External appearances as in preceding cases—abdominal parietes healthy—all the viscera apparently healthy. The inflammation of the mucous membrane lining the nasal cavity, pharynx, and upper portion of œsophagus, as in Case 7th, only not quite so acute—no ulcers on the membrane.

Cases 5th and 6th *reviewed.* The heads of these two subjects having been accidentally preserved, I examined them, and found the inflammatory action of the mucous membrane same as in cases 7th and 8th. Nor have I a particle of doubt that the same would have been found the case in *all* the preceding subjects, had they been examined.

Nosology and Treatment.—I had little difficulty in coming to the conclusion that the primary and main disease was a species of catarrh. It evidently, however, differed from ordinary catarrh in its diagnosis, and in the extent of the lesions accompanying both the primary and symptomatic diseases.

In no case, even in the first attack, did I notice anything—the fever—the accelerated pulse—the redness about the eyes and nostrils—the coughing, etc., accompanying an ordinary severe attack of catarrh. And it was for this reason that I was misled as to the seat of the malady. From the very outset, according to my observations, the type of the disease was typhoid—sinking—rapidly tending to fatal prostration.

How to reduce the local inflammation of the membrane lining the nasal cavities, I was at a loss to determine. I was satisfied that there was too much debility to admit of an antiphlogistic course of treatment. Still, to make myself sure, I bled in three or four cases, and, as I anticipated, it evidently accelerated the fatal catastrophe. Blistering could not be brought near to the seat of the inflammation, excepting on the nose, and independent of the extreme difficulty of treating a blister on a spot so constantly exposed to dirt, the rubbing of hay, etc., in winter feeding, I believed it could have little effect, on an account of the thick nasal bone intervening between it and *any portion* of the inflamed membrane. And, moreover, the greater portion of the inflamed membrane rested on bones detached, except at one extremity, from all connection with the nasal bone. I blew Scotch snuff (through paper tubes) up the nostrils of some of the sheep, for two objects—1, to remove, by sneezing, the mucus, which mechanically, and evidently injuriously, obstructed respiration; and 2, to produce a new action, by which an increased mucous secretion would be excited, and thus the congested membrane relieved. But, farther than this, I re-

sorted to no local or other treatment designed specifically to reach the local inflammation.

The next step was to fix on the constitutional treatment. The liver was evidently in a torpid state. There was a functional derangement in the mesenteric and probably other glands, and a want of activity in the general secretory system. What medicine would stimulate the liver, cause it to secrete the proper quantity as well as quality of bile, change the morbid action of the glands and secretory system, and restore activity and health to the vital functions generally? In my judgment, nothing promised so well as mercury; and by its well known effect on the entire secretory system, it would powerfully tend to relieve the congested membranes of the head. In this opinion I was joined by a learned and experienced physician, who, both as a matter of taste and humanity, has given no little attention to veterinary science and practice. The proto-chloride of mercury (calomel) was supposed to possess too much specific gravity to reach the fourth stomach, with any certainty, administered in a liquid; and if administered as a ball or pill, it would be almost *sure* not to reach that stomach.* The dissolved bi-chloride of mercury (corrosive sublimate) was therefore hit upon. One grain was dissolved in two ounces of water, and one-half ounce of the water (or one-eighth of a grain of corrosive sublimate) was exhibited in a day, in two doses.

As constipation existed in most of the cases, it was thought that the bowels required to be stimulated into action, and slightly evacuated with a mild laxative. Having noticed in similar cases of debility and torpor of the intestinal canal, that purgation is often followed by a serous diarrhea, difficult to correct, and leading to rapid prostration, and there being no intestinal irritation to suffer exacerbation, I thought that rhubarb—from its well known tendency to give tone to the bowels, and its secondary effect as a mild astringent—was particularly indicated. It was given in a decoction—the equivalent of ten or fifteen grains at a dose—accompanied with the ordinary carminative and stomachic adjuvants, ginger and gentian, in infusion.

To a portion of the sheep I administered the rhubarb and its adjuvants alone; to others I gave the bi-chloride of mercury *in addition* to the preceding. I employed these courses of treatment in a number of cases, the records of all which have been accidentally destroyed with the exception of the following three.

Case 9th. Ram, three years old. Has been drooping and weak, with feeble appetite, for some time—has been separated from flock. Has eaten his oats irregularly for several days, and refused turnips, bran, etc., altogether—much emaciated—eyes partly closed, with a yellowish deposit below them—caruncle and lids bloodless—nostrils impeded with adhesive yellowish mucus.

March 17th. Weaker than before—would not rise to feed—not seen to eat or ruminate—gait, when helped up, weak and staggering; eyes nearly closed—stooled dry, hard fæces—urine dark and reddish. Exhibited rhubarb with ginger and gentian in gruel—blew snuff into nostrils. March 18th, morning—Weaker; refused to eat anything. Exhibited rhubarb, ginger and gentian in gruel. Noon—Urine seemingly bloody: breathing labored: exhibited corrosive sublimate in gruel. Night—Dying. March 19th, morning—Dead.

Post-mortem appearances. Inner edges of both lobes of liver softened about two inches from horizontal fissure: hypropericarditis and hydro-

* For reasons which will be hereafter given under the head of "The Proper Way of Administering Medicines."

thorax—nearly half pint of serum in latter. Other viscera apparently normal. Lining of superior portion of œsophagus and nasal cavity as in Case 8th.

Case 10th. Three-year-old ewe. Drooping for several days: sleepy—emaciated and weak: cannot rise without help: appearances about nostrils and eyes as in Case 9th: appetite considerable—rumination not observed. March 17th. Exhibited ginger and gentian in gruel: blew snuff in nostrils. Latter produced sneezing and a discharge of mucus. 18th: Morning. Weaker and would not eat. Noon. A little livelier: ate hay and grain; exhibited ginger and gentian. Night. Evacuations thin: urine of a natural color. 19th. Morning: same. Noon. Exhibited same remedies as before. The same course was pursued for three days: the sheep appearing rather to gain, when one morning it was found dead. No post-mortem examination made.

Case 11th. Old ewe. Symptoms precisely as in Case 10th, except an occasional grinding of the teeth. March 17th. Treated exactly as in Case 9th. Lived three days and appeared to rally a little, then brought forth a lamb and died. Post-mortem examination. Abdominal parietes healthy—gall-bladder filled with pale bile: liver normal in size but softened throughout its entire extent, and pale: portions of it paler and more disorganized than others: no parasites in its ducts. Thoracic viscera normal. Sub-acute inflammation of the mucous lining of the nasal cavity, and of the superior portion of the œsophagus. Slight ulcer in the ethmoidal cells.

I made various other post-mortem examinations. Some of the viscera in every case were in a more or less abnormal state; but there was the same variety in the locality of the diseased action as in the preceding cases. But so far as the seat and character of the catarrhal affection was concerned, it was *uniform in every case.* The only difference was in intensity, as exhibited by the extent of the lesions.

Not a single sheep recovered after the emaciation and debility had proceeded to any great extent! One such only lingered along until shearing. Its wool gradually dropped off: it seemed to rally a little once or twice, and then relapse; and it perished one night in a rain-storm. In the generality of instances the time from the first observed symptoms until death, varied from ten to fifteen days. A few died in a shorter time.

In the three cases last detailed, the disease had evidently proceeded too far to be arrested by *any* treatment. I much regret the loss of the records of the other cases, which would throw farther light on the subject. I *thought* that the treatment produced favorable effects in some instances—particularly when resorted to at the commencement of the disease. At all events, some of the sheep recovered under the treatment—particularly under that including the exhibition of the bi-chloride of mercury—and very few, if any, recovered without any treatment. Candor compels me to say, however, that the results of the treatment were far from being *highly* satisfactory—that the cases of recovery were much fewer than the deaths. I have merely stated what I believe to be the facts in the premises; I do not feel prepared to make *any recommendations.*

The epizoötic gradually abated toward spring, and my flock have since been in perfect health.

Near spring, many farmers found what seemed to them an unusual number of grubs in the head (frontal sinuses) of the sheep which died of the prevailing epizoötic, and therefore they attributed the disease to this cause, and this seems to be the prevailing popular opinion. In some of the *latest* cases in my flock, I discovered more or less grubs; and, in two or three instances, an unusual number. In other cases where the external symp-

toms and the post-mortem appearances were almost identical, no grubs were to be seen. For this reason, and others which I shall assign when treating of grub in the head, I conclude that the popular opinion is erroneous.

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THE ROT.—The existence and prevalence of the Rot in the United States have been sufficiently alluded to in Letter XIV. Notwithstanding its comparative rareness here, so far as is known, at present, I think it expedient to give a full description of it. It may be more prevalent hereafter, or it may be found peculiar to localities where sheep have not yet been introduced. And whether so or not, as its existence will often be feared and suspected in diseased flocks, it is proper that the flock-master always have it in his power to clearly identify this terrible destroyer.

The diagnosis of the disease is thus given by Mr. Spooner.*

"The first symptoms attending this disease are by no means strongly marked; there is no loss of condition, but rather apparently the contrary; indeed, sheep intended for the butcher have been purposely *cothed* or rotted in order to increase their fattening properties for a few weeks, a practice which was adopted by the celebrated Bakewell. A want of liveliness and paleness of the membranes generally may be considered as the first symptoms of the disease, to which may be added a yellowness of the caruncle at the corner of the eye. Dr. Harrison observes, 'when in warm, sultry or rainy weather, sheep that are grazing on low and moist lands feed rapidly, and some of them die suddenly, there is fear that they have contracted the rot.' This suspicion will be farther increased if, a few weeks afterward, the sheep begin to shrink and become flaccid about the loins. By pressure about the hips at this time a crackling is perceptible now or soon afterward, the countenance looks pale, and upon parting the fleece the skin is found to have changed its vermilion tint for a pale red, and the wool is easily separated from the pelt; and as the disorder advances the skin becomes dappled with yellow or black spots. To these symptoms succeed increased dullness, loss of condition, greater paleness of the mucous membranes, the eyelids becoming almost white and afterward yellow. This yellowness extends to other parts of the body, and a watery fluid appears under the skin, which becomes loose and flabby, the wool coming off readily. The symptoms of dropsy often extend over the body, and sometimes the sheep becomes *chockered*, as it is termed—a large swelling forms under the jaw, which, from the appearances of the fluid it contains, is in some places called the *watery poke*. The duration of the disease is uncertain; the animal occasionally dies shortly after becoming affected, but more frequently it extends to from three to six months, the sheep gradually losing flesh and pining away, particularly if, as is frequently the case, an obstinate purging supervenes."

Mr. Youatt thus describes the post-mortem appearances:†

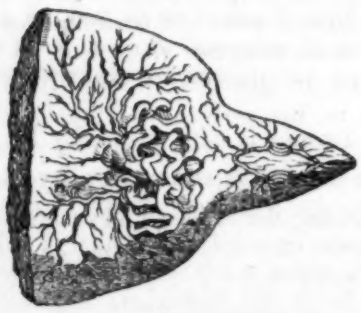
"When a rotted sheep is examined after death, the whole cellular tissue is found to be infiltrated, and a yellow serous fluid everywhere follows the knife. The muscles are soft and flabby: they have the appearance of being macerated. The kidneys are pale, flaccid, and infiltrated. The mesenteric glands enlarged, and engorged with yellow serous fluid. The belly is frequently filled with water or purulent matter; the peritoneum is everywhere thickened, and the bowels adhere together by means of an unnatural growth. The heart is enlarged and softened, and the lungs are filled with tubercles. The principal alterations of structure are in the liver. It is pale, livid, and broken down with the slightest pressure; and on being boiled it will almost dissolve away. When the liver is not pale, it is often curiously spotted. In some cases it is speckled like the back of a toad. Nevertheless, some parts of it are hard and schirrous; others are ulcerated, and the biliary ducts are filled with flukes. Here is the decided seat of disease, and it is here that the nature of the malady is to be learned. *It is inflammation of the liver.* . . . The liver attracts the principal attention of the examiner: it displays the evident effects of acute and destructive inflammation; and still more plainly the ravages of the parasite with which its ducts are crowded. Here is plainly the original seat of the disease—the center whence a destructive influence spreads on every side. . . . The Fluke—the *Fasciola* of Linnæus—the *Distoma hepaticum* of Rhodolphi—the *Planaria* of Goese—is found in the biliary ducts of the sheep, the goat, the deer, the ox, the horse, the ass, the hog, the dog, the rabbit, the guinea-pig, and various other animals, and even in the human being. It is from three quarters of an inch to an inch and a quarter in length, and from one-third to half an inch in greatest breadth.

* Spooner, p. 391, et supra.
† Youatt, p. 447, et supra.

Figs. 56 and 58 represent this parasite of its usual size and appearance, and its resemblance to a minute sole, divested of its fins, is very striking. The head is of a pointed form, round above and flat beneath; and the mouth opens laterally instead of vertically.

Fig. 56. Fig. 57. Fig. 58.

Fig. 59.



THE FLUKE.

There are no barbs or tentaculæ, as described by some authors. The eyes are placed on the most prominent part of the head, and are very singularly constructed (fig. 57). They have the bony ring of the bird. . . . The anastomoses of the blood-vessels which ramify over the head are plainly seen through a tolerable microscope. The circulating and digestive organs are also evident, and are seated almost immediately below the head. The situation of the heart is seen in fig. 56, and the two main vessels evidently springing from it, and extending through almost the whole length of the fluke. Smaller blood-vessels, if so they may be called, ramify from them on either side. The convolutions of the bowels appear in fig. 59, and the vent, both for the fæces and the ova, and probably for the connection between the sexes, is on the under part, and almost close to the neck. . . . .

In the belly, if so it may be called, are almost invariably a very great number of oval particles, hundreds of which, taken together, are not equal in bulk to a grain of sand. They are of a pale red color, and are supposed to be the spawn or eggs of the parasite. . . . .

There can be no doubt that the eggs are frequently received in the food. Having been discharged with the dung, they remain on the grass or damp spot on which they may fall, retaining their vital principle for an indefinite period of time. . . . They find not always, or they find not at all, a proper nidus in the places in which they are deposited; but taken up with the food, escaping the perils of rumination, and threading every vessel and duct until they arrive at the biliary canal, they burst from their shells, and grow, and probably multiply. . . . .

Leeuwenhoek says that he has taken 870 flukes out of one liver, exclusive of those that were cut to pieces or destroyed in opening the various ducts. In other cases, and where the sheep have died of the rot, there were not found more than ten or twelve. . . .

Then, is the fluke worm the cause or the effect of rot? To a certain degree both. They aggravate the disease; they perpetuate a state of irritability and disorganization, which must necessarily undermine the strength of any animal. . . . . Notwithstanding all this, however, if the fluke follow the analogy of other entoza and parasites, it is the effect and not the cause of rot. . . . .

The rot in sheep is evidently connected with the soil or state of the pasture. It is confined to wet seasons, or to the feeding on ground moist and marshy at all seasons. It has reference to the evaporation of water, and to the presence and decomposition of moist vegetable matter. It is rarely or almost never seen on dry or sandy soils and in dry seasons; it is rarely wanting on boggy or poachy ground, except when that ground is dried by the heat of the summer's sun, or completely covered by the winter's rain. On the same farm there are certain fields on which no sheep can be turned with impunity. There are others that seldom or never give the rot. The soil of the first is found to be of a pervious nature, on which wet cannot long remain—the second takes a long time to dry, or is rarely or never so. . . . .

Some seasons are far more favorable to the development of the rot than others, and there is no manner of doubt as to the character of those seasons. After a rainy summer or a moist autumn, or during a wet winter, the rot destroys like a pestilence. A return and a continuance of dry weather materially arrests its murderous progress. Most of the sheep

that had been already infected die; but the number of those that are lost soon begins to be materially diminished. It is, therefore sufficiently plain that the rot depends upon, or is caused by, the existence of moisture. A rainy season and a tenacious soil are fruitful or inevitable sources of it. . . . . The mischief is effected with almost incredible rapidity."

Mr. Youatt here gives various instances to prove that rot is engendered in a few hours and even minutes.* He farther says:

"It is an old observation that all pasture that is suspected to be unsound, the sheep should be folded early in the evening, before the first dews begin to fall, and should not be released from the fold until the dew is partly evaporated. . . . .

Then the mode of prevention—that with which the farmer will have most to do, for the sheep having become once decidedly rotten, neither medicine nor management will have much power in arresting the evil—consists in altering the character of as much of the dangerous ground as he can, and keeping his sheep from those pastures which defy all his attempts to improve them. . . . . If all unnecessary moisture is removed from the soil, or if the access of air is cut off by the flooding of the pasture, no poisonous gas has existence, and the sheep continue sound. . . . .

The account of the *treatment* of rot must, to a considerable extent, be very unsatisfactory."

Mr. Youatt proceeds to recommend the *sale* of sheep to the *butcher* when they are found to be rotted! Rot hastens for a short period the accumulation of fat. Bakewell—a man whose name is associated with the exhibition of prodigious abilities in the improvement of stock, but, in my mind, tarnished also by an equal exhibition of selfishness and absolute meanness—displayed a characteristic sagacity in *purposely* rotting his sheep to avail himself of the above circumstance!† It is with pain I make the following quotation from Youatt—the only thing of such a character I remember to have noticed in his voluminous works:

"It is one of the characters of the rot to hasten, and that to a strange degree, the accumulation of flesh and fat. Let not the farmer, however, push this experiment too far. Let him carefully overlook every sheep daily, and dispose of those which cease to make progress, or which seem beginning to retrograde. It has already been stated that the meat of the rotted sheep, in the early stage of the disease, *is not like that of the sound one;* it is pale and not so firm; but it is not unwholesome (!) and it is coveted by certain epicures, *who, perhaps, are not altogether aware of the real state of the animal (!!)* All this is *matter of calculation*, and must be left to the owner of the sheep; except that, if the breed is not of very considerable value, and the disease has not proceeded to emaciation or other fearful symptoms, the first loss will probably be the least; and if the owner can get anything like a tolerable price for them, the sooner they are sent to the butcher, or *consumed at home*, the better. Supposing, however, that their appearance *is beginning to tell tales about them*, and they are too far gone to be disposed of in the market or consumed at home, are they to be abandoned to their fate? No: far from it."

Conceding to Mr. Youatt the whole benefit of that saving clause about "consumption at home," the above sentence is one which I could well wish stricken from his valuable work. The sale of the meat of diseased animals, for human consumption, is abhorrent to decency and propriety, and there is not a respectable American family which would not revolt at the idea of either selling or consuming such meat.

Of the treatment of rot, Mr. Youatt continues:

"If it is suited to the convenience of the farmer, and such ground were at all within his reach, the sheep should be sent to a salt-marsh in preference to the best pasture on the best farm. There it will feed on the salt incrusted on the herbage, and pervading the pores of every blade of grass. A healthy salt-marsh permits not the sheep to become rotten which graze upon it; and if the disease is not considerably advanced, it cures those which are sent upon it with the rot. . . . Are there any indications of fever—heated mouth, heaving flanks, or failing appetite? Is the general inflammation beginning to have a determination to that part on which the disease usually expends its chiefest virulence? Is there yellow-

* Youatt, p. 453.
† So say both Spooner and Youatt.

ness of the lips and of the mouth, of the eyes, and of the skin? At the same time, are there no indications of weakness and decay? Nothing to show that the constitution is fatally undermined? Bleed—abstract, according to the circumstances of the case, eight, ten, or twelve ounces of blood. There is no disease of an inflammatory character at its commencement which is not benefited by early bleeding. To this let a dose of physic succeed—two or three ounces of Epsom salts, administered in the cautious manner so frequently recommended; and to these means let a change of diet be immediately added—good hay in the field, and hay, straw, or chaff, in the straw-yard.

The physic having operated, or an additional dose, perchance, having been administered in order to quicken the action of the first, the farmer will look out for farther means and appliances. . . . . Two or three grains of calomel may be given daily, but mixed with half the quantity of opium, in order to secure its beneficial, and ward off its injurious effects on the ruminant. To this should be added—a simple and cheap medicine, but that which is the sheet-anchor of the practitioner here—common salt. . . . . In the first place, it is a purgative inferior to few, when given in a full dose; and it is a tonic as well as a purgative. . . . . A mild tonic, as well as an aperient, is plainly indicated soon after the commencement of rot. The doses should be from two to three drachms, repeated morning and night. When the inflammatory stage is clearly passed, stronger tonics may be added to the salt, and there are none superior to the gentian and ginger roots; from one to two drachms of each, finely powdered, may be added to each dose of the salt. . . . . The sheep having a little recovered from the disease, should still continue on the best and driest pasture on the farm, and should always have salt within their reach. . . . . The rot is not infectious."

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Diarrhea.—This disease is often more properly a *nervous* than a *febrile* one—in the former case, a morbid increase of the peristaltic motion of the bowels—in the latter, an inflammation of the *mucous* coat of the smaller intestines. But for the purpose of viewing it in connection with dysentery, to which it is sometimes closely allied, and into which it often runs—and which is clearly a febrile disease—it will be described here.

Common diarrhea, purging, or scours, manifests itself simply by the copiousness and fluidity of the alvine evacuations. It is brought on by a sudden change from dry feed to green, or by the introduction of improper substances into the stomach. It is important to clearly distinguish this disease from dysentery. In diarrhea there is no apparent general fever; the appetite remains good; the stools are thin and watery, but unaccompanied with slime (mucus) and blood; the odor of the fæces is far less offensive than in dysentery; the general condition of the animal is but little changed.

Treatment.—Confinement to dry food for a day or two, and a gradual return to it, oftentimes suffice. I have rarely administered anything to grown sheep, and never have lost one from this disease. To lambs, especially if attacked in the fall, the disease is more serious. If the purging is severe, and especially if any mucus is observed with the fæces, the feculent matter should be removed from the bowels by a gentle cathartic—as half a drachm of rhubarb, or an ounce of linseed-oil, or half an ounce of Epsom salts to a lamb. This should always be followed by an astringent, and in nine cases out of ten, the latter will serve in the first instance. I generally administer, say, $\frac{1}{4}$ oz. of prepared chalk in half a pint of tepid milk, once a day for two or three days, at the end of which, and frequently after the first dose, the purging will have ordinarily abated or entirely ceased.

The following is the formula of the English "sheep's cordial" usually prescribed in cases of diarrhea by the English veterinarians, and there can be no doubt it is a safe and excellent remedy—better probably than simple chalk and milk, in severe cases: Take of prepared chalk one ounce, powdered catechu half an ounce, powdered ginger two drachms, and powdered opium half a drachm; mix them with half a pint of peppermint water—give two or three table-spoonsfull morning and night to a grown sheep, and half that quantity to a lamb.

Dysentery.—Dysentery is caused by an inflammation of the mucous or inner coat of the larger intestines, causing a preternatural increase in their secretions, and a morbid alteration in the character of those secretions. It is frequently consequent on that form of diarrhea which is caused by an inflammation of the mucous coat of the smaller intestines. The inflammation extends throughout the whole alimentary canal, increases in virulence, and it becomes dysentery—a disease frequently dangerous and obstinate in its character, but fortunately not common among sheep in this part of the United States. Its diagnosis differs from that of diarrhea in several readily observed particulars. There is evident fever; the appetite is capricious, ordinarily very feeble; the stools are as thin or even thinner than in diarrhea, but much more adhesive in consequence of the presence of large quantities of mucus. As the erosion of the intestines advances, the fæces are tinged with blood; their odor is intolerably offensive; and the animal rapidly wastes away. The course of the disease extends from a few days to several weeks.

Treatment.—I have seen but a few well-defined cases of dysentery, and in the half-dozen instances which have occurred in my own flock, I have usually administered a couple of purges of linseed-oil, followed by chalk and milk as in diarrhea (only doubling the dose of chalk), and a few drops of laudanum, say twenty or thirty—with ginger and gentian. According to my recollection, about one-third of the cases have proved fatal, but they have usually been old and feeble sheep.

Farther inquiry satisfies me that moderate bleeding should be resorted to in the first or inflammatory stage of the disease, or whenever decided febrile symptoms are found to be present.

Mr. Youatt prescribes bleeding, cathartics, mashes, gruel, &c. He says:

"Two doses of physic having been administered, the practitioner will probably have recourse to astringents. The sheep's cordial will probably supply him with the best; and to this, tonics may soon begin to be added—an additional quantity of ginger may enter into the composition of the cordial, and gentian powder will be a useful auxiliary. With this—as an excellent stimulus to cause the sphincter of the anus to contract, and also the mouths of the innumerable secretory and exhalent vessels which open on the inner surface of the intestine—a half grain of strychnine may be combined. . . . . Smaller doses should be given for three or four days."

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Garget—Is an inflammation of the udder, with or without general inflammation. Where simply an inflammation of the udder, it is usually caused by a too great accumulation of milk in the latter prior to lambing, or in consequence of the death of the lamb. It is not the serious malady, here, described by the English veterinarians.

Treatment.—Drawing the milk partly from the bag so that the hungry lamb will butt and work at it an unusual time in pursuit of its food, and bathing it a few times in *cold** water, usually suffices. If the lamb is dead, the milk should be drawn a few times, at increasing intervals, washing the udder for some time in cold water at each milking. In cases of obdurate induration, the udder should be anointed with iodine ointment. If there is general fever in the system, an ounce of Epsom salts may be given.

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NERVOUS DISEASES.

Apoplexy.—Soon after the sheep are turned to grass in the spring, one of the best conditioned sheep in the flock is sometimes suddenly found dead.

* The English veterinarians recommended *warm* fomentations.

The symptoms which precede the catastrophe are occasionally noted. The sheep leaps frantically into the air two or three times, dashes itself on the ground and suddenly rises, and dies in a few moments. Such cases occur but now and then, and none have ever occurred in my flock to my knowledge. I have therefore had no opportunity of observing the diagnosis, or making dissections. There can be little doubt, however, that the disease is apoplexy.

Desirous to raise the condition of a poorish flock (the poorest sheep culled from my other flocks) somewhat too rapidly, perhaps, some winters since, in addition to good hay three times a day, I ordered them fed a gill of oats per head; and as rapidly as it could be done without bringing on scours, I had them fed a liberal allowance of Swedish turnips—about as much as they would eat up clean. They gained perceptibly. One day a sheep was reported to me as having become suddenly blind and motionless. I immediately examined it. It was in good fair condition. It stood with its head a little down—its eyes were glassy and staring—it was stone blind! The evening before nothing unusual had been perceived about it. I bled it at the inner angle of each eye, and the blood had scarcely started before its sight began to return. In less than a minute it walked off among its companions. It had no relapse. Another case was soon reported; I treated it in the same way, and with the same apparent effect. The symptoms soon returned, however, and I bled again. This appeared to produce but a partial restoration of the sight. The sheep would not follow its companions into and out of the sheep-house. When approached, it would run about knocking its head against fences, &c. It lost condition, finally became unable to rise, and died. Another one, after being bled, fed regularly, but its sight was never restored. It lived along thus for three or four weeks, and then fell into a hole containing water, and perished. Another apparently recovered, all but sight, and continued in my flock for more than a year afterward. The eye was bright and *clear*, as in *gutta serena*, and the blindness would not be suspected, unless the sheep was cornered up. Then, if the catchers remained momentarily *still*, it would as soon run into their arms or against the fence, as in any other direction. Perhaps fifteen cases occurred. In three or four instances the *blind* sheep, when they moved, constantly traveled round in a circle. In about as many cases, they twisted themselves about without progressing, the head was drawn round toward one side, they fell, ground their teeth, and their mouths were covered with a frothy mucus. In neither of the latter description of cases did bleeding at the inner angles of the eyes afford anything more than temporary relief. They all proved fatal.

At the time these things occurred, I regret to say that I had paid but very little attention to veterinary science, and had never made a dissection. I did nothing but bleed at the inner angles of the eyes, and made no post-mortem examinations.

Taking into consideration the feed and the symptoms, there can be but little doubt, I think, that all these cases were referable to a *determination of blood to the brain*. The sheep were not *fat*, but the secretions of blood were rapidly and powerfully increased by rich and abundant food.

Treatment.—If the eyes are prominent and fixed, the membranes of the mouth and nose highly florid, the nostrils highly dilated, and the respiration labored and stertorous, the veins of the head turgid, the pulse strong and rather slow, and these symptoms attended by a partial or entire loss of sight and hearing, it is one of those decided cases of apoplexy which require immediate and decided treatment. As the good effects of vene-

section, in all cases, and especially in this, depend not only upon the amount of blood abstracted, but also upon the rapidity with which it is drawn from the veins, the eye-veins are not the proper ones to open. They are so small that the blood flows slowly, and if cut directly *across*, as is usually done, they soon contract, and the flow of blood is arrested before a sufficient quantity has been abstracted. It is better to have recourse at once to the jugular vein. The animal should be bled until an obvious constitutional effect is produced—the pulse lowered and the rigidity of the muscles relaxed. An aperient should at once follow bleeding, and if the animal is strong and plethoric, a sheep of the size of the Merino would require at least two ounces of Epsom salts, and one of the large mutton sheep more. If this should fail to open the bowels, half an ounce of the salts should be be given, say, twice a day.

In the milder cases which I have mentioned as occurring in my own flock, I think had I bled more thoroughly, in the very first attack, and given a mild aperient of Epsom salts, most of the sheep would have recovered.

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Phrenitis, Tetanus, Epilepsy, Palsy, Rabies.—I never have seen a well-defined case of either of these maladies among our sheep, though, in a few instances, something which struck me at the time as somewhat analogous to paralysis or palsy. Palsy is a diminution or entire loss of the powers of motion in some part of the body. I have occasionally seen, in the winter, poor lambs, or poor pregnant ewes, or poor feeble ewes immediately after yeaning in the spring, lose the power of walking or standing rather too suddenly to have it satisfactorily referable to increasing debility. The animal seems to have lost all strength in its loins, and the hind-quarters are powerless. It makes ineffectual attempts to rise, and cannot stand if placed upon its feet.

Treatment.—Warmth, gentle stimulants, and good nursing, might raise the patient, but in nineteen cases out of twenty it would be more economical and equally humane, to at once deprive it of life.

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Colic.—Sheep are occasionally seen, particularly in the winter, lying down and rising every moment or two, and constantly stretching their fore and hind legs so far apart that their bellies almost touch the ground. They appear to be in much pain, refuse all food, and not unfrequently die, unless relieved. This disease is popularly known as the "*stretches*," and is erroneously attributed to introsusception of an intestine. Some farmers worry the sheep with a dog, and others hold it up by the hind legs, to effect a cure! I consider it a sort of flatulent colic induced by costiveness.

Treatment.—Half an ounce of Epsom salts, a drachm of ginger, and sixty drops of essence of peppermint. The salts alone, however, will effect the cure, as will an equivalent dose of linseed-oil, or even hog's lard.

A Female Farmer.—The second premium for the best cultivated farm in Litchfield Co., Ct., awarded the past season to Mrs. Vesta Hawkins, of Watertown.

The farm contains one hundred and sixty acres. It has been under her management for the last ten years. The Committee of Examination say: "It is divided the present season into twenty-three acres of meadow, three and one-half corn, six of oats, one and a half of rye, two of buckwheat, a half acre of potatoes, seven acres of wood-land and the residue of pasture land." The produce of the farm for the past season is estimated as follows: fifty tons of hay, two hundred bushels of corn, one hundred and thirty-three shocks of oats, and one hundred and fifty bushels of potatoes. The stock kept on it last season consisted of twenty-six head, including six calves, two horses, and fifty-six sheep. This farm is conveniently laid out in small fields, the fences mostly of rails, all in good repair, and with the buildings, presenting a neat and tidy appearance.

 [Ex. Paper.

ITEMS ABOUT TURNIPS AND OTHER ROOT CROPS,

WITH VARIOUS OTHER SUBJECTS INTRODUCED INCIDENTALLY—READ AND SEE.

In the full persuasion that American agriculturists may not have sufficiently dwelt upon the value of the Turnip Crop—we mean particularly the Swedish Turnip—as food for cattle and sheep, as well for nutriment as for increasing the bulk and the value of their farm-yard manure—we shall bring together such items as we may meet with, and that may serve to awaken public attention to their importance, and perhaps remove some of the prejudice which has prevented their cultivation more extensively. We select turnips from other root crops, because they are made by a simpler process, demand less labor in tending and storing, and if *sowed in time* in land well prepared, will, as it is believed, yield a much more remunerating crop than is generally believed. The apprehension which has most deterred farmers from the cultivation of them, has been the fear of drouth and the quantity of labor, together with a want of practical knowledge of their actual value as compared with other food.

Be it, then, our endeavor to throw some light on these points in the course of what we shall select and what we shall say.

The largest crops that have fallen under our personal observation—such as appeared comparable with those that are realized in England, where this root is said to give meat and bread to the nation, and indirectly to uphold the Government—crops which in fact appeared to be amply remunerating—have been those we have seen at Mr. Corning's, near Albany, under the skillful management of Mr. Sotham; and at Marshfield, under the general superintending direction of the "Great Expounder" himself.

We don't propose to give instructions for their culture, except in one extract; for sometimes we think practical farmers must really be surfeited with reading, again and again, the same old stories about common field practice, every form and process of which has been so often repeated; and as respects the different kinds and the culture of turnips, no one need desire more information than we have given in Stephens's Book of the Farm.

Our object will be rather to show, by examples of crops here and there, as we see accounts of them, what has been done in our country, and thence to insist on what *may be done* when this shall be made, as other crops have been, an object of special attention and trial, under a persuasion of its real value. The first item within reach comes to us in that very sensible, practical and judicious paper, the 'Massachusetts Ploughman,' whose agricultural department never fails to repay to us the attention which it always attracts. In an account of one of their late Club meetings in the Hall of Legislation:

Mr. BROOKS, of Princeton, went into an estimate of the relative values of different roots for stock compared with hay. He had not grown turnips extensively. From ¼ of an acre he had grown 100 to 150 bushels. For young stock he counts them *as good as hay. pound for pound.* They do not fatten like potatoes, but keep the bowels open. Potatoes are better for milch cows than any kind of turnips.

We may venture to claim acquaintance with Mr. Brooks, and know him to be in judgment and character altogether reliable. Here we see that 500 bushels to the acre can be counted on.

Mr. S. W. Cole exhibited a large, irregular cabbage-turnip. He said this kind yields as well as the ruta-baga, and will keep as long. He raised 200 bushels in drills between his nursery rows. He lets them stand a foot or more apart in the rows. Thinks he could raise 800 bushels per acre.

J. W. Proctor, Esq., of Danvers, thought we ought to inquire which of the roots we can raise to the best advantage—beets, turnips, or carrots. He thought carrots most profitable; beets exhaust the soil; 35 tons of carrots had been grown on an acre in Essex county; 32 tons were not uncommon—worth eight dollars a ton. Carrots are good to prepare the ground for onions. 100,000 bushels of onions had been grown in Danvers in a year. Five hundred bushels is a common crop per acre. 800 bushels have been made to the acre.

Thirty-two tons at $8—$256 to the acre! Do not these cases show the advantages of a policy that produces factories and villages all over a State, to consume, *on the spot*, these bulky commodities? It is there that swamps and marshes, and the rich lands, are brought under the plow and the spade. Will the reader look back to our quotation in this number, page 476, from Hon. J. R. Poinsett, addressed to the Agricultural Society of South Carolina, as to the effect of home manufactures on the prosperity of States that encourage them?

The following Table may be useful in other respects, while it shows how familiarly English writers speak of from *thirty to fifty tons of turnips to the acre:*

CALCULATION OF SPACES, WEIGHTS AND PRODUCTS.

Distances between the drills.	Distances between the plants.	Space occupied by each.	Number per imperial acre.	Wt. of each turnip.	Total wt. per acre.
Inches.		Square inches.	Number there should be		Tons. Cwts.
27	9 inches between soand whites.	243	24.813	at 3 lbs....	34 11
				at 5 lbs....	57 12
27	10 inches between yellow turnips.	270	23.232	at 4 lbs....	41 8
				at 5 lbs....	51 15
27	12 inches between Swedes.	324	19.360	at 3 lbs....	25 19
				at 4 lbs....	34 12
				at 5 lbs....	43 5

How much more nutriment, according to this Table, does an acre produce in turnips than in hay, if Mr. Brooks's opinion of their comparative value should even nearly approach to accuracy, more than making up for the vast difference in the expense of the two crops?

The nutritive properties of the white turnip, however, according to Sir Humphry Davy, are but 42 in 1,000, and we cannot but suspect that Mr. Brooks, for whose general intelligence and judgment we have great deference, very much overrates the nutritive properties of this root as compared with hay.

But let us proceed. We have concluded to take up the subject thus early because, for those who would propose to make experiments on a considerable scale, it is not too soon to be thinking about the land most suitable—how it is to be put in the best order, and where the manure is to come from. It presents a fair case for the use of bones or guano. But, after all, while farmers are thinking and talking, and Editors writing so much about manures, and looking for short cuts to arrive at great results, is it not to be doubted whether we are not losing sight too much of that good old system of Tull, the father of agricultural improvement in England?—we mean *thorough tillage!*—putting the ground itself in the nicest and best possible condition! Will our readers please *think of that?*

We have somewhere, as it is believed, lately seen that a premium was awarded by the Queens County Agricultural Society for a crop of turnips of *eight hundred bushels to the acre!*

Nearly twenty-nine years ago, in the old American Farmer, while yet it was

the only agricultural paper, and was still far from paying its way, we published accounts of four hundred bushels of ruta-bagas to the acre, and gave full instructions about them. Cobbett was the first to make a great stir about them in our country. It will be seen that Johnston rates an average crop at not much short of one thousand bushels.

As far back as 1821—twenty-six years ago—we published an account of a crop of turnips, 834 heaping bushels made on an acre of land, by Joseph W. March of Greenland, who gave under his own signature the following account of the mode of culture:

Last fall about one-half of the lot was plowed, and it was intended the whole should have been plowed, but the early hard frost prevented. Last spring about eight loads of compost manure were spread on the ground and plowed in, two-thirds of which probably was swamp and mixed with barn-yard dung.

On the 18th of June, I began to plant the seed. After harrowing the ground, seven furrows were made lengthwise the piece, three and a half feet apart, with a horse plow. Into these furrows good barn-yard manure was shoveled from a cart passing alongside, at the rate of about fourteen loads per acre. Then a strong ox-team with a good plow passing up one side and down on the other, plowing very deep, formed a high ridge directly over the manure. After the seven ridges were plowed, a horse going between two ridges with a light roller leveled the tops; then a hoe was drawn along to make a small furrow for the seed. Previous to dropping it, some manure was strewed along at the rate of four to five loads per acre, in order to force the growth of the young plants, when first up, that the fly might not destroy them. A boy then dropped the seed along the ridges, a few in a place, about a foot apart, then covering them with a hoe completed the manner of sowing.

The principal labor in the after culture, was the first weeding and thinning out the plants. But as this was done in the season of hay making, at times when the weather was unfit for making hay, the expense is considered trifling. I should judge, however, that the labor of the after culture is about equal to that of Indian corn.

The produce of the acre is *eight hundred and thirty-four heaped bushels of turnips*, besides of leaves what was judged to be about five tons. The expense of harvesting was comparatively very small; the whole being done in a part of one day. Upon calculation made of the time, and number of hands employed, it appeared that five men could easily have pulled them up, gathered them into carts, and housed them (after hauling them a distance of more than a quarter of a mile) in one day.

In the same year we published an account from Thomas Hillen, near Baltimore—as truthful a man as any to be found in a day's ride, and as a practical farmer, an honor to the State. He had turnips to measure from twenty-nine to thirty and a half inches round, and gathered from one-quarter of an acre 155 bushels; from 3¼ acres and 14 perches, although part of the ground was made quite unproductive by superfluous moisture—1,665 bushels. They weighed 61 pounds to the bushel; from an eighth of an acre he got 5,108 pounds; from a quarter of an acre 9,455; and from the three-and-a-quarter acres and fourteen perches 101,565 pounds. Agricultural Societies have continued to offer premiums for patches of turnips, and will to the end of the chapter. This mode of proceeding produces, as is seen, that sort of excitement which is begotten by lotteries. They would do much better to offer a premium of $50 or a piece of plate; and better still, *books* of the value of $50, for the best Essay—one that should most thoroughly discuss and indicate to the agricultural community, whether, and under what circumstances, and for what uses, turnips can be *profitably sustituted for other crops*. In the one case they would elicit and impart valuable practical information; in the other they stimulate some man to go to an enormous expense on a quarter of an acre, to have it said that he won a prize for doing what has been done for the last thirty years by others.

The New-York State Agricultural Society awarded the following premiums lately at Albany, for the following root crops. The one for turnips goes to show what can be done, and ought to be satisfactory as to the soil and climate of this

State at least. Under the wise regulations of this Society, constantly improving, and especially of late years, in its administration of the office it has undertaken, the winner of this turnip premium, Mr. Hastings, has doubtless been required to detail with particularity the whole process, and *all* the expenses ; and that account, instead of being published at once, far and wide in the agricultural and other papers, through which the whole community could get it, at a cost of a cent or two, will some year probably make its appearance in a few big volumes, to be *given* away to a few persons, all of whom are well able, but many of them too miserly to subscribe to an agricultural paper, though they can find means to pay for a *party sheet*—or to be given out again as premiums.

Not an agricultural journal is patronized by the State Agricultural Society—although the Cultivator, the Agriculturist and the Genesee Farmer have done ten thousand times more to diffuse knowledge and keep alive a spirit of inquiry, than all the agricultural societies and institutes in the State, from their foundation to the present day. But for the agricultural and the general Press, these institutions could not sustain existence. Any one of the papers we have named, diffuses fifty times as much information, and to ten times as many people, as their Volumes of Transactions. Let agricultural journals be suspended, and we should see all these Societies gasping for breath, like mice in an exhausted receiver. The following were the premiums for crops :

FIELD CROPS.

Indian Corn.—Geo. Vail, Troy, (2 acres, 67 bushels per acre,) $20.

Spring Wheat.—Robert Eells, Westmoreland, Orange Co., (2 acres, 20½ bushels per acre,) $8.

Barley.—Benjamin Enos, De Ruyter, Madison Co., (2 acres, 39 bushels per acre,) $10. E. C. Bliss had not sufficient land for premium.

Oats.—Charles W. Eells, Kirkland, Oneida Co., (2 acres, 85¾ bushels per acre,) $10. Benj. Enos, De Ruyter, Madison Co., (71 bushels per acre,) $8.

Beans.—E. C. Bliss, Westfield, Chautauque Co., (31¼ bushels per acre,) $8.

Flax.—Wm. Newcomb, Pittstown, Rensselaer Co., (half acre,) $5.

ROOT CROPS.

Potatoes.—Daniel Newcomb, Pittstown, Rensselaer Co., (1 acre, 405 bushels,) $10. Martin Springer, Brunswick, Rensselaer Co., (360 bushels,) $8.

Ruta-Bagas.—Joseph Hastings, Brunswick, (1 acre, 1,317 bushels,) $10.

Carrots.—Wm. Risley, Fredonia, Chautauque Co., (half acre, 557 bushels,) $8.

It will be seen that Mr. Vail, the worthy President of the Society, and now, like all his predecessors, a Member of the Executive Committee, *ex officio*, bore off the premium for the heaviest crop of corn—67 bushels to the acre on two acres.

Fifty years ago, a wager of fifty guineas was laid between Mr. John Stevens, of Hoboken, and Mr. Daniel Ludlow, of Westchester, who would make the greatest crop of Indian corn on an acre of land. Mr. Ludlow made 98 bushels and 14 quarts, and was beaten by his competitor, who made 118 bushels and 2 quarts—not far from double the State Society premium crop in 1847. What then comes of the effect of these premiums after a repetition for so many years? If the Society persist in offering them, should they not require that the crop should be equal, at least, to any recorded, *and* that it be the result of a process, take it altogether, which it would be *advisable and profitable for farmers generally to follow?* If the object be to ascertain merely what *can* be done, has not that been shown every year for fifty years? We speak only of what appears to us to be the true policy. It would be much easier, more agreeable, and more profitable, to praise everything, or to "lay dark ;" but that 's a policy we shall not practice while acting as one of the humblest sentinels over the interests of the agricultural community.

A writer of great candor and credibility before the American Revolution, put down the usual wheat crop above Albany at from 20 to 40 bushels. And here would seem to be an appropriate place for introducing the following Tables from one of Johnston's Lectures. They may serve for frequent reference, and we are persuaded will be found very acceptable. Perfect and exact precision is not expected in such cases, but who can be better relied on for a near and reliable approximation to it than he?

AVERAGE COMPOSITION AND PRODUCE OF NUTRITIVE MATTER PER ACRE, BY EACH OF THE USUALLY CULTIVATED CROPS.

1st. *Average Composition.*—The relative proportions of the several most important constituents contained in our cultivated crops vary, as we have seen, with a great number of circumstances. The following Table exhibits the average composition of 100 parts of the more common grains, roots and grasses, as nearly as the present state of our knowledge upon the subject enables us to represent it:

	Water.	Husk, or woody fibre.	Starch, gum, and sugar.	Gluten, albumen, legumin, &c.	Fatty matter.	Saline matter.
Wheat	15	15	55	10 to 19	2 to 4	2
Barley	15	15	60	12 to 15	2 to 3	3
Oats	16	20	60	14 to 19	5 to 7	4
Rye	12	10 to 20	60	10 to 15	3 to 4	2
Indian Corn	14	6	70	12	5 to 9	1¼
Buckwheat	15	25	50	8	0·4?	4
Rice	13	3	75	7	0·7	0½
Beans	14	8 to 11	40	24 to 28	2 to 3	3
Pease	14	9	50	24	2·1	3
Potatoes	75	4	18	2·0	0·3	¾ to 1¼
Turnips	88	2	9*	1·5	0·3	½ to 4·5
Carrots	85	3	10	1·5	0·4	1¼ to 2
Mangel-wurzel	85	2	11	2·0	?	¾ to 1¼
Meadow hay	14	30	40	7·1	2 to 5	5 to 10
Clover hay	14	25	40	9·3	3 to 5	9
Pea straw	10 to 15	25	45	12·3	1·5	4 to 6
Oat straw	12	45	35	1·3	0·8?	6
Wheat straw	12 to 15	50	30	1·3	2 to 3½	5
Barley straw	do.	50	30	1·3	?	5
Rye straw	do.	45	38	1·3	?	4
Indian Corn, do	12	25	52	3·0	1·7	3 to 7

Some of the above numbers are approximations only. The proportions of fatty matter especially, are in many instances very uncertain.

2d. *Gross Produce per Acre.*—The gross produce, per acre, of the different crops varies in different districts of the country. The weight of each crop in pounds, however, will, in general, approach to one or other of the quantities represented by the numbers in the following Table:

	Produce per acre.	Weight per bushel.	Total weight in pounds.
Wheat	25 bushels.	60 lbs.	1,500
--	30 --		1,800
Barley	35 --	53 lbs.	1,850
--	40 --		2,120
Oats	40 --	42 lbs.	1,680
--	50 --		2,100
Rye	25 --	54 lbs.	1,350
--	30 --		1,620
Indian Corn	30 --	60 lbs.	1,800
Buckwheat	30 --	46 lbs.	1,380
Beans	25 --	64 lbs.	1,600
--	30 --		1,920
Peas	25 --	66 lbs.	1,650

	Weight of produce.		Weight of produce.
Potatoes	6 tons	Carrots	25 tons
--	12 --	Meadow hay	1½ --
Turnips	20 --	Clover hay	2 --
--	30 --		

Wheat straw	3,000 lbs.	Rye straw	4,000 lbs.
--	3,600 --	--	4,800 --
Barley straw	2,100 --	Bean straw	2,700 --
--	2,500 --	--	3,200 --
Oat straw	2,700 --	Pea straw	2,700 --
--	3,500 --		

* In the turnip, carrot, and mangel-wurzel, it will be remembered that pectic acid takes the place of starch.

3d. *Average Produce of Nutritive Matter per Acre.*—In the *gross* produce above given, there are contained, according to the first Table, the following *average* proportions of nutritive matter of various kinds:

Average Produce of Nutritive Matter of different kinds from an Acre of the usually cultivated Crops.

	Gross produce.		Husks, or woody fibre.	Starch, sugar &c	Gluten, &c.	Oil or fat.	Saline matter.
	Bush.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Wheat	25	1,500	225	825	150 to 280	30 to 60	30
..	30	1,800	270	990	180 to 340	36 to 72	36
Barley	35	1;800	270	1080	210 to 260	36 to 54	50
..	40	2,100	315	1260	250 to 310	42 to 63	60
Oats	40	1,700	340	1000	230 to 320	80 to 120	70
..	50	2,100	420	1050	290 to 400	75 to 150	80
Rye	25	1,300	130 to 260	780	130 to 200	40 to 50	26
..	30	1,600	160 to 320	960	230 to 350	48 to 64	32
Indian Corn	30	1,800	100	1260	216	90 to 170	27
Buckwheat	30	1,300	320	650	100?	5?	21
Beans	25	1,600	160	640	380 to 450	32 to 48	48
..	30	1,900	190	760	450 to 530	38 to 57	57
Peas	25	1,600	130	800	380	34	48
	Tons.						
Potatoes	6	13,500	540	2400	270	45	120
..	12	27,000	1080	4800	540	90	240
Turnips	20	45,000	900	4000	670	130	300
..	30	67,000	1340	6000	1000	200	450
Carrots	25	56,000	1680	5600	840	200	800
Mangel-wurzel	20	45,000	900	4950	900	?	450
Meadow hay	1½	3,400	1020	1360	240	70 to 170	220
Clover hay	2	4,500	1120	1800	420	135 to 225	400
Pea straw		2,700	675	1200	330	40	135
Wheat straw		3,000	1500	900	40	60 to 100	150
..		3,600	1800	1080	48	70 to 120	180
Oat straw		2,700	1210	950	36	?	135
..		3,500	1570	1200	48	?	175
Barley straw		2,100	1050	630	28	?	105
..		2,500	1250	750	33	?	125
Rye straw		4,000	1800	1500	53	?	160
..		4,800	2200	1800	64	?	200

The most uncertain column in this Table is that which represents the quantity of oil or fat contained in the several kinds of produce. The importance of the whole Table to the practical man will appear more clearly when we come to treat of the feeding of stock.

N. B. We have just noted, as we go along, a communication from "*A Stranger,*" to the Marlboro' Gazette, in which, giving an account of a visit to Mr. Charles Hill, of Prince George's County, Maryland, he says:

"But that which interested me most, and which I have deemed worth communicating to the public through the columns of your able paper, is the cheap method Mr. H. has adopted this winter of feeding his cows. Seeing and tasting is *believing*, and both tests I applied to his fine butter, which was very nice and agreeable to the taste, while its color was rich and beautiful. This butter is made from common cows—not *fresh* cows, either, fed on corn fodder and corn shucks, with a liberal supply of the white turnip boiled well. No *meal* or bran is used—nothing but a little salt to season the turnip *wash*, as he terms it. From six indifferent cows he is enabled to supply an uncommonly large family of children with plenty of fine milk, an abundance of rich milk and cream for his table, and makes from fifteen to twenty pounds of this good butter per week. This *fact* is worth a thousand arguments. It establishes the great value of white turnip for milch cows. Either prejudice or ignorance has so often asserted that they were of no value, that our farmers have believed without making a fair trial, and have abandoned their culture except for table use."

Laudable as is this advance step, in Maryland management, we must say it is not common to get butter of rich and beautiful color and flavor in winter season from white turnips. Why does not Mr. Hill sprinkle into the "wash" a quart of Indian meal a day for each cow? It can't be because *he* can't afford it; but on the score of sheer economy, let him try it for a month and see if it does not tell *profitably*, both on the quantity and quality of their butter. Still, the example goes far enough to be of much value for our purpose, as showing what can be done, with ease and with very remunerating results.

We should sow the last of July, with a good season, rather than run the risk of another early in August, though we have known, under very favorable circumstances, even in our boyish days, a heavy crop to come in Calvert County, from seed sown on the 10th of September, on old cow-penned land. If men won't try, and that *in the right way*, how do they know what can be done?—There 's a *way* in doing everything, as there is a right and a wrong side in *mounting a horse*. There is no crop so carefully prepared for in England, whose very Government is said to rest on turnips, as the *turnip crop*. For them it is meat and meal.

REARING AND FEEDING CALVES.

[Abridged from the German.]

HAVING had 34 years' experience in rearing calves, I hope you will excuse the liberty I take in sending you the following account of my practice—especially as I have found my method so much better than allowing the calves to suck their mothers. Whether the animals were intended for *keepers* or *feeders*, I have always found that my method brings them soonest to perfection. It is shortly this:

1. For the first week the calf receives daily six quarts of new milk, as warm as it comes from the cow, in three portions—at morning, noon, and night. I carefully adhere to these three times of feeding for the first 12 weeks.

2. In the second week the milk is increased by half a pint at each feeding time; so that the calf receives, according to its strength, not less than 6¾ to 7 quarts per day.

3. In the third week the calf no longer receives new milk, but the milk of the previous day skimmed; always taking care to warm the milk slightly, and at the same time increasing the quantity, so that the daily ration is now 7½ quarts. I also commence at this time to introduce into the drink small portions of boiled linseed, or linseed meal and crushed peas.*

4. I proceed in the same manner in the fourth, fifth and sixth weeks, except that the milk is increased each week by half a pint at every feeding-time, so that in the fourth week the calf receives 8¼, in the fifth 9, and in the 6th 9¾ quarts of milk daily; the animals also receiving more and more linseed meal, crushed peas, or rye meal in their drinks, which are always lukewarm.

5. In the next six weeks I gave them their food cold—with, however, more of these mixtures; the latter are always increased with the quantity of the milk, because too much liquid food is very apt to make the calves poor and pot-bellied. During this period I also take from them a portion of their milk, adding in its place such a portion of the linseed or other substances mixed with warm water as still to make the total quantity of each day's drink (increased, as I have said before, by half a pint at each meal) in the seventh week 10½ quarts, and in the twelfth week 14¼ quarts per day.

6. Whoever pays proper attention to the feeding of his cattle will soon discover whether the proportion of food named be sufficiently rich or not, and can easily add or diminish the proper quantity.

7. There can be no animal so stupid about its food as the calf; it must therefore be taught from its earliest infancy. For this purpose, in teaching them to take their food when mixed with the linseed meal, &c., we generally begin by giving a small handful of oatmeal, and placing within their reach some good hay, or, if the season will afford it, some green food.

8. When the calves are twelve weeks old, the milk is entirely taken from them, and they receive in its place rye meal or crushed peas, made into pulp with water, and then thinned; the daily ration being increased until the end of the second quarter from 14½ to 20 quarts.

9. When the calves are half a year old, the drinking food is gradually lessened and thinned—the quantity being regulated by the natural thirst of the animals, as it gradually takes on to more substantial food.

10. The following is the statement of the expense of bringing up a calf until one year old:

1. The first 14 days 91 quarts of good milk.
2. From the second to the sixth week, 242 quarts of skimmed milk (12 hours old).
3. From the seventh to the twelfth week, 252 qts. of very poor milk (24 hours old.)
4. Half cwt. of linseed meal.
5. Three bushels of crushed peas.
6. Two bushels of rye meal.
7. Hay, oats, green food, &c.

Total expense of these in Germany, £3 sterling.

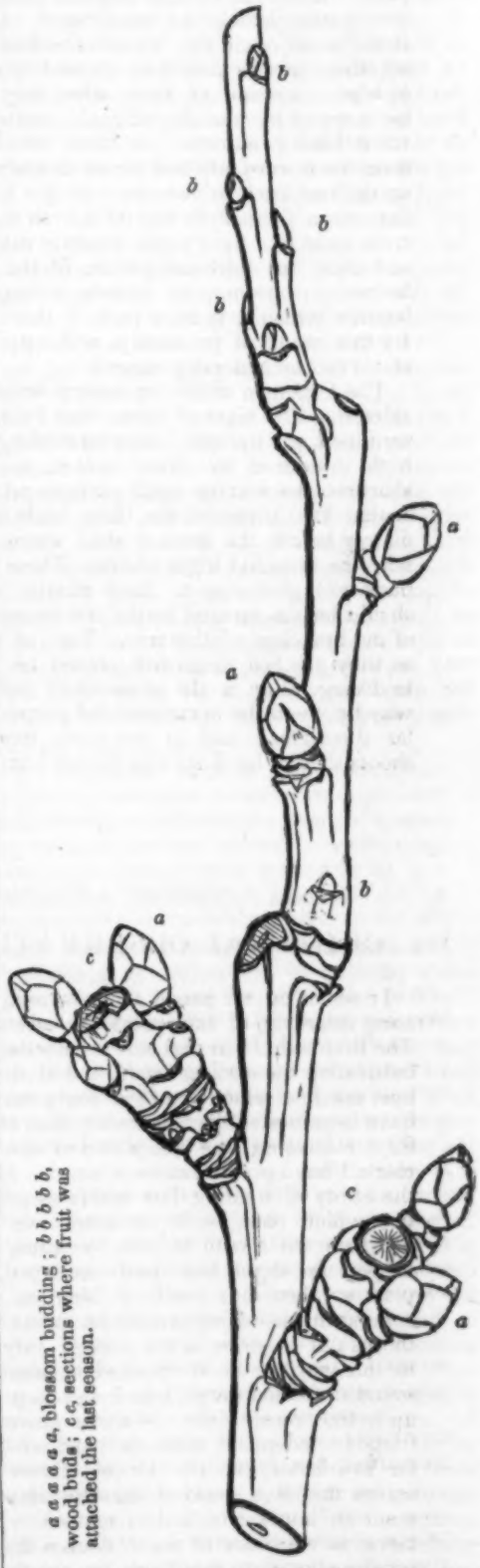
* Corn meal might be substituted for flax-seed, and for beans or other meal.

PRUNING.—THE APPLE TREE.

The Apple tree, left to its natural growth, forms generally a low stem, branching out into a top, which ultimately becomes hemispherical, toward the outside of which fruit-spurs, leaves, and fruit are most abundant: to support these branches interiorly may be considered as a sort of framework, for they are often destitute of spurs or foilage. In pruning and training it is necessary to bear this natural tendency of growth constantly in mind; for although that tendency may be subdued or diverted to suit the purposes of cultivation, yet it cannot be annihilated while the trees are young, and as vigorous as they ought to be. A tree may be prevented from growing up with a single stem by cutting back; then several shoots usually result, and these become so many smaller stems, if not interfered with. Like the individual stem, they are not disposed to bear fruit; their tendency is to be merely pillars or supporters of a system of elevated ramifications, at the extremities of which fructification naturally takes place. Being aware of this, the operations of pruning and training necessary to be performed when the tree is to be grown in any particular form different from its natural habit, will be better understood. The modes in which the Apple tree is grown are numerous. The principal are, as standards, open dwarfs, pyramids, trained against espaliers, and against walls.

A *Standard*, properly managed, should have a clean, straight, and substantial stem. By substantiality of stem is here meant a structure capable of supporting itself without bending, and hence not requiring the aid of stakes. In general, this property is too little thought of; or at its expense, the other properties are endeavored to be obtained. The following will illustrate this. Supposing it were required to grow an Apple tree with a stem (if such it might be called) fifteen feet in length, yet nowhere more than an inch in diameter; the way to effect this would be to train a maiden plant to a rod, taking care to allow no side-shoots to grow, nor any leaves, excepting a very few at top. By adopting a similar proceeding year after year, the stem will reach the hight above-mentioned, and be like a slender, flexible rod, almost of uniform thickness, which would instantly bend to the ground on being deprived of its support. It must be considered a work of misapplied art; for naturally the plant would have put forth side-shoots and leaves as it advanced; and these leaves would have contributed to the formation of layers of wood, increasing the thickness of the base; thus the stem would have become an elongated cone, a form adapted for self-support.

From what has been stated, it is obvious that the necessity for stakes is owing to the improper management of the plant while the stem is being reared; and this again from the erroneous idea that a sufficiently clean stem cannot be produced unless it be stripped of



a a a a a, blossom budding; *b b b b b*, wood buds; *c c*, sections where fruit was attached the last season.

leaves, twigs, in short of everything but the bark. Every leaf which appears along the young stem should be encouraged. If any strong shoot break out, let it be checked; but all other laterals should be allowed to go on at least to the end of July, when they may be stopped by pinching off their points. In the following autumn cut them off closely from the lower portion of the stem, and shorten the rest back to one eye. In the following season these eyes will push fresh shoots; treat them like their predecessors in summer, and clear an additional portion of the stem below, in autumn, by closely cutting the laterals which may have pushed therefrom. By this mode of procedure, self-supporting stems can be generally insured.

The formation of the top must now be considered. The hight of clear stem being determined, the upright leader exceeding that hight in summer by several inches, must be shortened back at the ensuing winter-pruning, so that the lowest of the three buds immediately below the section shall correspond with the intended hight of stem. These three buds will give rise to three shoots, which should be encouraged for the commencement of the branches of the tree. Each of them, as they proceed in growth, should be made to diverge at an angle of about 45°, or half way between the horizontal and perpendicular directions; and at the same time, the shoots should be kept equidistant from each other. At the winter-pruning, they should be shortened to within nine inches or a foot of their bases; particularly observing to cut above two buds pointing outward in the direction which it would be desirable the shoots proceeding from them should take.—Six limbs will thus be originated. Again, a little attention in summer will ensure an equal divergence of the shoots from the perpendicular, and equal distances from each other. Meanwhile a gradual divestment of the temporary shoots on the stem is presumed to have annually taken place as above recommended. The scars resulting from the suppression of those on the lower part of the stem will have nearly or quite healed over; for this process will be greatly accelerated by the action of leaves on shoots left above. It may be observed that after all these temporary shoots are removed from them, their beneficial effects continue; for the roots formed by their agency still remain to contribute to the future growth of the tree.

After the principal branches have been started, it would be well to regulate the growth of the top for a few years longer, by checking, about midsummer, any shoots that are over-luxuriant, or that are taking a wrong direction. Afterward, little pruning will be required. The branches should be kept thin enough to admit sufficient sun and air; and after bearing heavy crops, portions of the extremities should be a little shortened.

CULTURAL OBSERVATIONS ON THE POTATO FOR 1848.

It seems on all hands to be agreed that *early* planting of the potato is advisable. The first point of importance is selecting and cultivating the earliest kinds, and at the earliest possible season; not that early varieties have been less subject to disease than others, for if cultivated at a late period of the summer all have proved alike affected. Hence the utility of treating late kinds as precocities, which plan, be it remarked, we have had recourse to with success, by raising them in pots on slight heat, early in April, and planting them out finally in May on open compartments, taking precaution to cut down the haulm or straw at the end of July, and in this way we have obtained an abundant sound crop, and large, which has kept well up to the present time. We recommend our friends to adopt the same plan, and we vouch for satisfactory results, for we flatter ourselves this is a decided cultural improvement in late kinds, and of national importance, as we conceive nearly double the land usually allotted to them will be required to produce ample supplies of early potatoes if late ones become extinct. Upon the same principle they may be ripened earlier on a larger scale by simply plastering a warm bed 2 inches thick with puddled dung or loam, which will more readily adhere to the roots when transplanted, then placing the sets firmly, as close as they may be conveniently removed with a trowel, finally covering them about 2 inches with light mould, precisely as with dahlias, to be slightly protected in case of frost until their final destination in May. We hope this will induce those who are about to raise potatoes from seed to be as early in the field as circumstances will admit, as the greater probability of success depends on raising them before the ordinary time, also of obtaining early selected seed, as seeds gathered and raised indiscriminately have signally failed, while the former have produced a crop of sound tubers, and many of ample size for the table the first year. For the encouragement of tyros in this department, we observe that on 7 rods under this early treatment, we have from one small packet of selected seed, value 7d., obtained 5 bushels of seedlings, sufficient to plant half an acre of land, which we intend to plant the ensuing season, not fearing success. We would farther add that no one need be ap-

prehensive of the impracticability of planting seedlings, as our best crops were obtained last season from seedlings of 1846, though diminutive in size as compared with those of 1847. In short, by superior cultivation, full crops may be obtained from seedlings not larger than peas. Also note, that seeds selected from a distinct early kind invariably produce tubers akin to the parent stock, while from those collected promiscuously or inadvertently, are produced a progeny in various sporting varieties; consequently, from their late tendency, many of them have fallen victims to the prevailing epidemic. HARDY & SON, *Maldon*.

PROGRESS OF THE AMERICAN CHEESE TRADE.

THE Detroit Free Press, the State paper of Michigan,, furnishes the following statement of this new and rather important branch of trade:

The Cheese trade is rapidly augmenting in this country. The foreign exports of it have become a prominent article of supply for distant climes. Up to 1840 there was but a small quantity shipped, and that principally on foreign account. That year Messrs. Goodrich & Co., of New-York, and the Messrs. Green, of Boston, made the experiment of large consignments to England. Of course, they met with the usual prejudices, the market before having been furnished with foreign cheese from Ireland and Holland. By perseverance the American article gradually came into favor, until it has now reached a heavy consumption. It fills part of the cargo of almost every vessel that leaves our seaports for Liverpool. The statistics of export, as will be seen by the following, betoken a still farther extension, which is worthy the attention of the farmers of this State:

1840	lbs. 723,713	1843	lbs. 3.440,144
1841	1,748,781	1844	7,433,145
1842	2,456,677	1845	7,941,187
		1846	8,675,390

This foreign export trade has now reached over a million of dollars annually. It goes to fifty-two countries. Our heaviest customers in 1846 were—

England	lbs. 6,744,699	Hayti	lbs. 150,046
West Indies	807,040	British Guiana	162,420
Cuba	227,276	Scotland	88,041
Canadas	185,915	Venezuela	40,812

Until within five years, cheese has usually been kept on sale in our Eastern cities by grocers and produce dealers, with a general assortment of other products. A total revolution in this respect has taken place. In New-York and Boston, extensive houses, exclusively for cheese, are doing a large business. Several commission houses are now solely engaged in it.

The farmers of our State seem to have neglected this important branch of the dairy. Every other salable product is produced here in abundance; why not add this to our list of exports? We certainly possess the grazing land. Still we do not make 20 per cent. of the cheese consumed in the State. Daily it is shipped here from Buffalo, and goes into the interior of this State. Ohio also sends her hundreds of tons to our markets. Neither Western New-York nor Ohio possesses more advantages for its manufacture than our own farmers. We are told that at the prices it has borne for the last five years it is much more profitable than butter. In fact, for three months in the year, butter does not sell at any higher price. All dairy-women agree that two pounds of cheese are made easier than one pound of butter. Yet it is neglected.

In several towns near Buffalo, (Hamburgh and Collins,) it is the principal business of the farmers, and all who have embarked in it have greatly added to their wealth. Chautauque County farmers have increased their cows for cheese-making; Herkimer County, N. Y., produced 8,000,000 lbs. in 1845, according to the State Census; St. Lawrence 9,000,000 lbs. In Allegany County, heretofore, lumber was the principal production; nearly every farmer now turns out his five to twenty casks of cheese in the fall. All the Southern tier of counties in that State are largely embarking in it. The Census of 1835 gives the quantity made in the State at 36,000,000 lbs. Ohio has doubled her exports of it within five years. Indiana cheese is now becoming known in the market.

As a sample of its increase, we give the following statistics of the amount that arrived at tide-water on the Hudson River, from the Canal Collector's books:

Year.	Pounds.	Exported.
1834	6,340,000	
1835	9,586,000	
1836	14,060,000	
1837	15,560,000	
1838	13,810,000	
1839	14,530,000	
1840	18,820,000	723,713
1841	14,170,000	1,748,781
1842	19,004,000	2,456,677
1843	24,334,000	3,440,144
1844	26,672,500	7,433,145
1845	29,371,000	7,941,187
1846	34,812,513	8,675,390

Here is a large quantity, but a ready market is found. The increase of foreign exports is large. Up to last fall the duty on it in England was $2 42 per 100 lbs. Sir Robert Peel's new Tariff reduced it to $1 per 100,

which will cheapen it to British consumers. The prices range in Liverpool, according to quality, from $10 to $15 per 112 lbs., and for three years past the London market has never been overstocked but three or four times, which has lasted but two to five weeks. It is getting introduced into all circles, and driving the Dutch article out of market. Mr. Colman, in his Agricultural Tour in Europe, says he found it gracing the tables of the lords and nobles, where, five years ago, it had never found its way. He dined with a Marquis, who treated him to American cheese, American apples, American cranberries, and American cider in bottles.

It is now exported to the East Indies in boxes; found in Calcutta, and goes; with other notions, to the Celestials of China. None but the real skim-milk grindstones, however, can stand a hot climate.

How many millions of pounds would come pouring down from the rich mountain sides and valleys of fertile and temperate *Western Virginia*, if penetrated with railroads, as New-England is! Only look at the difference, and if there be a spark of State pride animating the bosoms of the descendants of the Marshalls, and Jeffersons, and Henrys, and Lees, let them look into the causes that are holding back that glorious Old Dominion, in the race that is pending between the Sisters of the Republic, "as if her legs were tied," and promising to bring her to the pole dead beat, and not even a third-rater. In Massachusetts, chiefly, and the adjoining States, there have been made, while Virginia *has been talking*, 851 miles of railroad, at a cost of $35,902,355; and, be it noted, of the finished parts of these roads, 662 miles pay a net profit of *over six per cent!*

A NEW BOOK, AND ONE MUCH WANTED.

A MANUAL OF THE PRINCIPLES AND PRACTICE OF ROAD-MAKING; comprising the Location, Construction, and Improvement of Roads, (Common, MacAdam, Paved, Plank, etc.,) and Railroads. By W. M. GILLESPIE, A. M. C. E., Professor of Civil Engineering in Union College.

THE work of which we have here given the title, has made its appearance very opportunely, as it was much needed for the very reasons given in the Preface:

"*The common roads of the United States are inferior to those of any other civilized country.* Their faults are those of direction, of slopes, of shape, of surface, and generally of deficiency in all the attributes of good roads. Some of these defects are indeed the unavoidable results of the scantiness of capital and of labor in a new country, but most of them arise from an ignorance either of the true principles of road-making, or of the advantages of putting these principles into practice. They may therefore be removed by a more general diffusion of scientific instruction upon this subject, and to assist in bringing about this consummation is the object of the present volume. In it the author has endeavored to combine, in a systematic and symmetrical form, the results of an engineering experience in all parts of the United States, and of an examination of the great roads of Europe, with a careful digestion of all accessible authorities, an important portion of the matter having never before appeared in English."

We gave an extract from it in a former number,* and have only now to reiterate, what we have so often urged, that these are the subjects which ought to be taught in our Common Schools, as practical exemplifications of the Mathematics which in some of them are now taught or pretended to be. How obviously does a thorough reform in the course of Common School education, lie at the bottom of all rational ideas of the improvement and prosperity of the agricultural class! The *elements* of Agriculture—the same in all countries and all climates, have been so simplified as to be teachable and comprehensible to boys from twelve to sixteen years; and of these elements there ought to be a strong infusion in every course of rural education.

We are happy to have it in our power to say that a book is now in the press, exceedingly well adapted to this end, and which will commend itself to every teacher and every learner in the United States. It has the highest sanction, and is of universal applicability, and will be so very cheap—not exceeding 37½ cents—as to make the price of no moment.

CORK BEE-HIVES.—Bee-hives have lately been made of cork, and have been found so serviceable that a considerable quantity of cork has been imported from London, for the purpose of making them.

FLOWER-CLOCK.—Linnæus formed, at Upsan, a flower-clock, the flowers of which indicated the hours by their different times of falling asleep.

* This article was written long since, and overlooked.

HOUSEWIFE'S DEPARTMENT.

KITCHEN GARDEN CALENDAR—*April.*—If the season is propitious, the gardener should now be active, and prepare his grounds for planting and sowing the more hardy vegetables—there is advantage in early cropping in light soils, transplanted plants root more readily, and seeds vegetate with greater certainty, especially in dry seasons. On heavy land we can hardly recommend hasty action; if the soil be prematurely worked, it is apt to retain traces of it, and remain stubborn throughout the season; it is therefore better to defer labor on such soils until it is sufficiently dry to crumble: if all is favorable, we may proceed as follows:

Alexanders, sow. *Angelica*, sow. *Artichokes*, plant or dress. *Asparagus*, sow, plant, force, and dress beds. *Balm*, plant. *Basil*, sow. *Beans*, sow, hoe. *Beets*, sow. *Borecole*, sow, prick out, leave for seed. *Broccoli*, sow. *Borage*, sow. *Burnets*, sow and plant. *Cabbages*, sow, plant. *Capsicum*, sow. *Cardoons*, sow. *Carraway*, sow. *Carrots*, sow, weed. *Cauliflowers*, late, sow in open ground. *Celery*, sow, leave for seed. *Chamomile*, plant. *Chives*, plant. *Chervel*, sow, leave for seed. *Coleworts*, plant. *Clary*, sow. *Cress*, sow. *Cucumbers*, sow. *Dill*, sow. *Earthing-up*, attend to. *Fennel*, sow or plant. *Finochio*, sow. *Garlic*, plant. *Horse-radish*, plant. *Hot-beds*, make and attend. *Hyssop*, sow, plant. *Jerusalem Artichokes*, plant. *Kale* (Sea,) sow and plant, dress beds. *Kidney beans* (dwarfs,) sow; (runners,) sow. *Lavender*, plant. *Leeks*, sow, leave for seed. *Lettuces*, sow weekly, plant from frames. *Marigolds*, sow. *Marjoram*, sow and plant. *Melons*, sow. *Mustard* and *Cress*, sow, leave for seed. *Mushroom beds*, make, attend to. *Mint*, plant. *Nasturtiums*, sow. *Onions*, sow, weed, plant and leave for seed. *Parsley*, sow, leave for seed, (Hamburgh,) sow. *Parsnips*, sow, hand-weed. *Peas*, sow, hoe, stick. *Pennyroyal*, plant. *Pumpkins*, sow. *Potatoes*, plant, attend forcing. *Purslane*, sow. *Radishes*, sow, thin. *Rape*, sow. *Rocambole*, plant. *Rue*, plant. *Salsify* and *Savory*, sow. *Scorzonera* and *Skirrets*, sow. *Shallots* and *Sage*, plant. *Sorrels*, sow and plant. *Spinach*, sow, thin, leave for seed. *Tansy* and *Tarragon*, plant. *Thyme*, sow and plant. *Tomatoes*, sow. *Turnips*, sow, plant and for seed. *Turnip-Cabbages*, sow. *Wormwoods*, sow.

In the Carolinas and Southward, plant beans, sow some peas in order to have an uninterrupted succession—spring-sown cabbage will now be fit to transplant—manure well if you expect fine heads; the plants set out in February and March will require culture, deep tillage is demanded by the cabbage tribe—about the middle or latter end of this month sow drumhead, flat Dutch and drumhead Savoy cabbage-seed for plants, to be set out in June—cauliflowers and broccoli may be sown. The carrots, parsnips, beets, &c., previously sown are now advancing in growth and should receive the necessary care; each of the roots named may now be sown—small onions set out in autumn and winter will shortly be fit for use—sow leeks for winter use; turnips sown last month should be hoed and thinned—asparagus is now in season, hoe over the beds to exterminate the weeds, the few heads which will be cut off are of no account compared with the good service of the hoe; draw up earth to the potato vines—sow radishes, the white summer and yellow turnips are the best for this season; lettuce may be transplanted, or drilled where intended to head; sow celery—plant more cucumbers and melons, also squashes—also okra, if not already in. The vigilant gardener will keep his eye upon the weeds—an hour's work now will equal a day's when the ground gets foul.

GREEN-HOUSE CALENDAR—*April.*—*Air*, admit daily as weather permits. *Camellias*, sow and graft. *Earth* in pots stir frequently; and add fresh if not done in March. *Greenfly* or *Aphis* usually indicates the house has been kept too cold. *Hardiest Plants* keep in coldest parts of house, near the ventilators. *Head down* irregular growing shrubs. *Heat*, increase if necessary. *In-arch* shrubby exotics. *Leaves* and *Wood* decayed, remove as they appear; clean with sponge or syringe. *Liquid Manure* apply to sickly shrubs. *Potted Plants*, shift as they require room; and water immediately. *Propagate* by seeds, cuttings, in-arching, and other modes, as the species permit. *Prune* or *pinch off* free growing shoots, to make shrubby growths. *Succulent* plants shift; plant cuttings and suckers. *Water* often, guided always by the plant's habits.

FLOWER GARDEN CALENDAR—*April.*—*Annuals* (Tender), prick out those sown in February and March into a hot-bed, water often. sow in hot-bed; (Hardy), may be sown in borders, &c., to remain; thin those advancing. *Auriculas* in bloom, shelter. (See *Hyacinth*). Supply with water often; those for seed, plunge pots in a sheltered border, where they can have sun until eleven o'clock, plant offsets, propagate by slips, seedling shade during mid-day. *Anemones* and *Auriculas* done flowering, take up and separate offsets. *Box* edging may be made, and old taken up, slipped and replanted. *Biennials*, finish sowing; plant out those sown last spring. *Bulbs*, in water glasses, done flowering, plant in ground after cutting down stalks: autumn flowering, take up and store, ready for planting in July; spring flowering, remove from borders to some place where they can complete their vegetation; their decayed leaves are unsightly. *Carnations* in pots give liquid manure, and water often, stir the earth; sow, plant into borders. *Climbing* plants, train and regulate. *Dahlias*, plant to remain, or in pots to forward in a frame until May. *Dress* the borders, &c., indefatigably. *Evergreens* plant: it is the best season. *Frames*, raise, by supporters at the bottom, as the plants within grow tall. Roll, trim edges, dress with earth if poor. *Gravel*, turn and lay afresh in dry weather, roll once a week. *Hyacinths*, shelter from

sun by an awning or matting over the beds, from nine to four; give the same shelter in bad weather day and night; those done flowering, take up; separate offsets and store. *Insects* destroy with tobacco smoke or dusting of Scotch snuff. *Magnonette*, sow in any warm border. *Mulch*, put round trees newly planted. *Pinks*, sow. *Polyanthuses*, sow, plant out and propagate by offsets; last year's seedlings now in bloom, mark best for propagating. *Potted Plants*, give fresh earth to, if not done last month; shift into larger; water freely. *Perennials*, those sown last spring may still be planted, and propagated by offsets; finish sowing. *Sticks*, are required to blooming plants. *Tulips*, take off pods to strengthen bulbs. *Watering* plants in pots is now required more frequently, yet moderately; give it early in the morning.

VEGETABLE LIFE—[By F. P. NICHOLS.]—Vegetable, like animal life, is derived from parental germination; it grows up to a state of maturity through the medium of nutrition; it sinks and declines from the exhaustion of its organization, occasioned by old age, and death ensues; the materials of its composition then decay and dissolve into their ultimate elements—thus leaving a vacancy upon the earth, to be filled up by the progeny of which it, in its turn, has become the author.

Vegetation commences its existence in a state of embryo, surrounded by a pulpy or fluid substance, upon which it is nourished, and contained in a tough skin; in this condition it is called seed. As soon as it becomes sufficiently strong to adapt the crude nourishment of the soil to its system, it grows ripe; and then, bursting from the case that has enveloped it, and by which it has been united to its parent tree, it is scattered about—in some cases carried by the wind to a considerable distance, in others projected by the elasticity of the seed-case; and in various other natural ways it is distributed upon the face of the earth, which it covers with the means of vegetation wherever sustenance has been supplied for its support.

As soon as the seed is deposited on a nutritive soil, it commences nourishing its enclosed germ, by absorbing the carbon of the surrounding air, and sucking up the fluids of the earth; thus strengthening and enlarging the tender plant, until, breaking through its covering, it sends forth two stems—one down into the soil, which throws out innumerable fibres, and is termed the *root*; the other, which is called the trunk, up toward the light, shooting forth branches, which in due season bear their appropriate leaves, flowers, &c.

The fibres of the root take up the food in the soil, and convey it in the form of *crude sap*, or undigested food, into the body of the root; from which it rises through the vessels of the trunk, undergoing all those various changes by which it is assimilated to a fit and proper nourishment whereon to support the existence of the plant.

The crude sap, thus deposited in the body of the root, is a compound of water and various earthy, saline, and gaseous matters: from the root it is impelled into the sap-vessels of the ascending trunk, where such agencies as light, heat, electricity, &c. acting upon it, it becomes decomposed, and deposits its various matters in a solidified form, in the various parts of the woody structure; it is now digested, and, dissolving the various matters it comes in contact with, rises up to the leaves, in order to receive the carbonic acid gas, which forms the vital ingredient of vegetable life, as oxygen does of animal: this is accomplished by the process of respiration. The sap being passed down a central vein of the leaf, is distributed through those innumerable minute vessels which form the network of that organ; there, by the action of the solar rays, a portion of the oxygen of the sap is given out, and the carbon of the air is absorbed in its stead; this only takes place during daylight; in darkness the reverse is the case—carbon is given out, and oxygen taken in.

The sap now, like the arterial or oxygenized blood of animals, becomes vital fluid, and returning along the branches, and down the trunk, is carried through the descending vessels to every part of the tree, repairing what is worn out, sustaining exhaustion, depositing the material of such new formations as the growth may require, and cleansing away all useless and obnoxious matter, which it carries down to the root, to be finally deposited in the soil.

Thus the vitality of vegetable life is dependent upon its organization, and hence subjected to the casualties of disease and accidental death. It may be starved by want of food; it may be poisoned by taking into its system noxious matter; it may be suffocated from want of air; its health may be impaired by breathing impurities; it may be invigorated by stimulants, and, in fact, is liable to all the vicissitudes of conscious nature. It performs its mission in replenishing the earth with verdure, fertilizing its soil, changing its inorganic substances into organic matter, purifying the atmosphere by absorbing the carbon by which it has been vitiated, and so, while yielding a fit nutriment to animal nature, rendering the earth a healthy habitation alike for man and beast. Such is the economy of vegetable existence. [Sharpe's London Magazine.

INFLUENCE OF MOTHERS ON THE LIVES AND HAPPINESS OF MEN—[By R. F. W. ALLSTON.]—If the great end of life be to prepare for a more exalted state of existence hereafter, the ends of knowledge should be to make men wiser, better, happier, and so to fit them for the society of the pure and perfect. To the gentler sex—to my fair countrywomen—belongs the pleasing and responsible task of laying the corner-stone, the groundwork of such preparation. It is at the mother's knee, in the homely nursery of childhood, that the earliest lessons are taught—they are among the last forgot. Dictated by natural affection, they are addressed to the heart and are indelibly impressed there. They are lessons of principle. No degree of talent can atone for the want of principle—no brilliancy of genius can compensate the want of virtue. True genius, indeed, in its nature, approaches the divine, is allied to virtue, and should always be associated with it. But for the errors and neglect which sometimes have obtained in *early education*, the world would not have to lament the sad fate of individuals possessing the highest qualities of mind, not directed, however, and not chastened by the holy principles of virtue.

The youthful man who treads the earth with firm, elastic step, approved by the aged, courted by the young, when tempted by his successful career to infringe the moral law, to yield to the

leadings of unbridled passion, is checked in the ardor of his temperament, for the first time, perhaps, by the timely recollection of her who with affectionate, mild voice, was wont to counsel her son, "Do unto others as you would have them do to you."

The man of years, broken in constitution and wasted with disease, while tottering on toward the last home of the wretched, stifles the rising murmur at his fate by the remembrance of the tested faith, the cheerful resignation and meek submission of a long lost mother.

Even the hardened criminal, when in his lonely cell he sighs for the home of his childhood, gives his first thought to the mother who endeared it. The man issoftened—he remembers! Whatever were her errors, whatever her conduct to others, she was always kind to him. The obdurate heart is subdued. He weeps bitter tears of contrition at his fall, and his voice is raised in accents, long unpracticed, to breathe forth the prayer which was taught him from her lips.

Cultivation of the Lettuce.—Mr. Forsyth gardener to the Earl of Shrewsbury, at Alton Towers, tells us that in that county boiled lettuce is a common dish, and recommends an improved mode of cultivation by which four crops a year shall be regularly-secured. He says:

"Any lettuce will grow freely in the open garden after the 22d of March; in any rich garden-soil, four seeds in a square foot are sufficient; three crops in summer, off the same land, may be easily got, and if persons will go to the expense or trouble of transplanting lettuce, many crops may be had; and as four will grow upon a square foot, and weigh, when young, half a pound each, every square yard of soil will produce in the three crops in the season, half a cwt., which is 15 cwt. to the pole of ground, or 120 tons to the acre."

To Destroy Cockroaches.—If your correspondents will try the following simple plan, I will warrant them that every beetle and cockroach will shortly disappear, and that the kitchen will not again be infested. Add about a tea-spoonfull of powdered arsenic to about a table-spoonfull of mashed boiled potatoes; rub and mix them well together, and then crumble about a third of it, every night at bed-time, about the kitchen hearth; it will be eaten up or nearly so, by the following morning. The creature is very fond of potatoes, and devouring them greedily, crawls again into its hole and perishes. I had occasion to have some alterations made in the kitchen-stove six months after I pursued this plan, and found hundreds of wings and dried mummies of defunct cockroaches. Their disappearance was not attended with the slightest perceptible smell; and though five years have elapsed, not one has again been seen in my kitchen. In putting it into practice, any remaining crumbs should be swept up the next morning.

F. H. HORNER, M. D.

We have tried the foregoing, and found it perfectly effectual. [Downing's Horticulturist.

To Drive away Rats.—Mr. Charles Pierce, of Milton, recommends potash for this purpose. The rats troubled him very much, having eaten through the chamber floor; they appeared in great numbers, and were very troublesome, so that he felt justified to resort to stratagem and severe treatment for their expulsion from his premises. He pounded up potash and strewed around their holes, threw some under their holes, and rubbed some on the sides of the boards and under part, where they came through. The next night he heard a squealing among them, which we supposed was from the caustic nature of the potash that got among their hair, or on their bare feet. They disappeared, and he has not been troubled with them since that time, which was nearly a year ago. [Boston Cultivator.

Sparrows.—It is proved that a pair of sparrows, during the time they have their young to feed, destroy, on an average, every week three thousand three hundred and sixty caterpillars. This calculation is founded upon actual observation. Two parents have been known to carry to their nest forty caterpillars in an hour; and, supposing the sparrows to enter the nest only twelve times during each day, they would cause a consumption of four hundred and eighty caterpillars; this sum gives three thousand three hundred and sixty caterpillars extirpated weekly from a garden. But the utility of the birds is not limited to this circumstance alone, for they likewise feed their young with butterflies and other winged insects, each of which, if not destroyed in this manner, would become the parent of hundreds of caterpillars.

Preservative against Moths.—A small piece of paper or linen just moistened with turpentine, and put into the wardrobe or drawers for a single day, two or three times a year, is sufficient preservative against moths.

Dibber or Dibble.—This instrument for making holes in which to insert seeds or plants, is usually very simple in its construction, being at the best the head of an old spade-handle. To secure uniformity of depth in planting beans, &c., by this instrument, it is useful to have it perforated with holes to receive an iron peg, at two and three inches from the point, as in the following outline. It should be shod with iron; for if this be kept bright it will make holes into which the soil will not crumble from the sides. The crumbling is induced by the soil's adhesion to the dibble. For planting potatoes a dibble with a head three inches diameter at the point, six inches long up to the foot-rest, and with a handle four feet long, is to be preferred. For the insertion of seed, a dibble that delivers the seed has been invented by a Mr. Smith.

☞ French beans, and some suppose the garden pea, Lima beans, &c., may be preserved for winter use by boiling them in corked bottles like gooseberries, for an hour or an hour and a half. Before using, they are to be scalded in water with a little salt. Celery may be preserved in the same way and requires only half an hour.

STANZAS.

"Why are we, like children, unwilling to go to bed?"
BISHOP HALL on "Death."

'Tis true, most true, as children shrink away
From the quick-coming nurse at close of day,
So from our last cold pillow fain would we
Draw back a little space, if it might be.
Why are we thus reluctant? Even as they
We dread the dark, we love the light of day.

The child will linger by his mother's knee,
The parting hour has banished all his glee;
That sweet, low song he longs again to hear,
To stay and watch the stars come, bright and clear;
It likes him not to quit the cheerful light
For the thick clouds and phantom form of night.

And even so to mother Earth we cling,
When Death unfolds his dark and gloomy wing;
For she is bright with flowers, and glad with birds,
And musical with tones of kindly words:
While all her sorrows in their dire array,
Seem now but shadows of a summer's day.

But the cold hands which beckon us to sleep
Unfold two worlds for meditation deep,
Make us behold the folly and the sin
That through long vanished years we gloried in,
And bid us look upon a Judge, whose eye
Is purer than to pass transgression by.

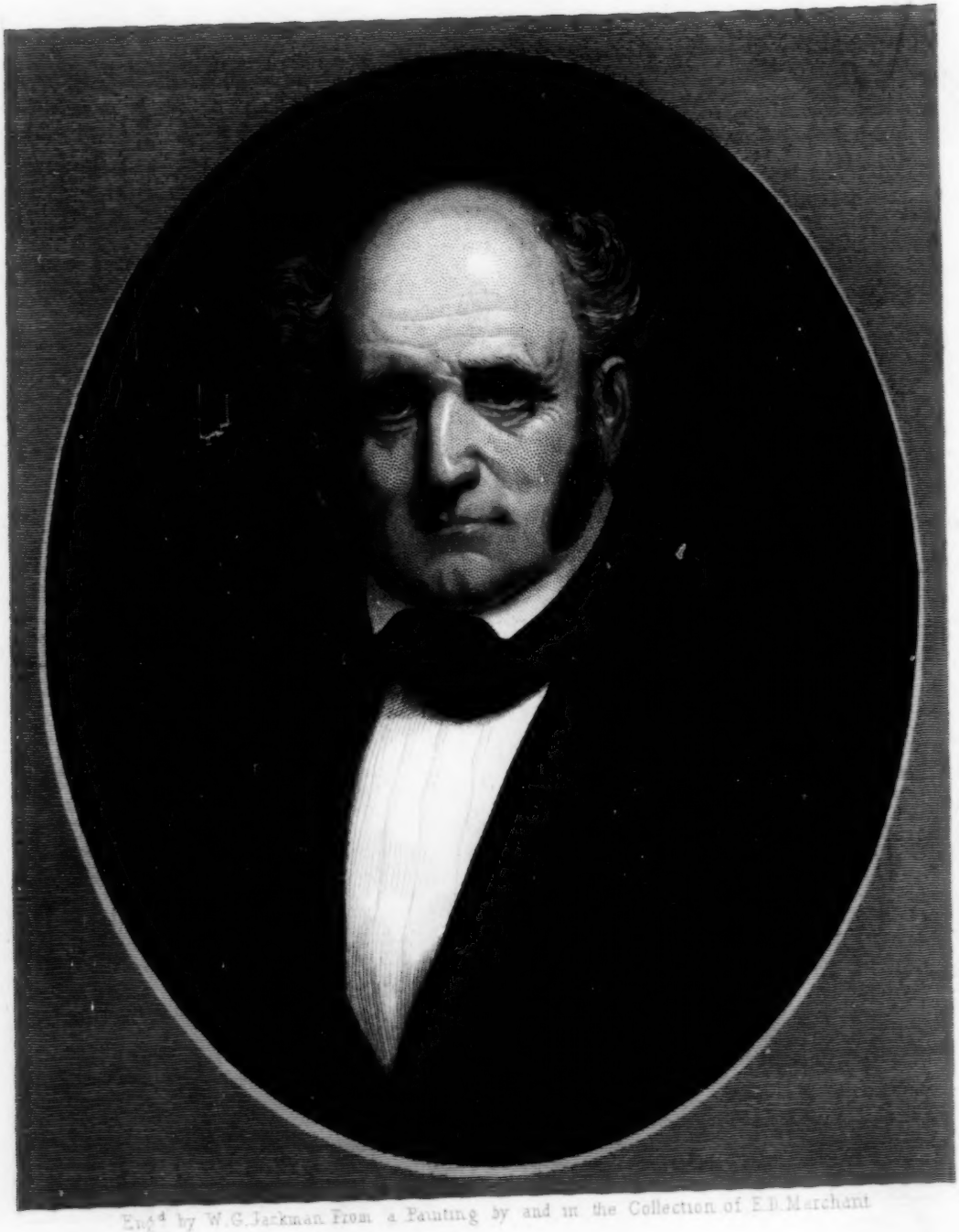
True, there is still one Sacrifice, one Rock,
One Shepherd watching o'er his weary flock;
But faith is weak, the heart with terror swells
As memory weaveth all its darkest spells:
Therefore, like frightened children, fain would we
Fly from our last rest, if it might be.

ELLEN C——.

PRICES CURRENT.

[*Corrected, March 29, for the Monthly Journal of Agriculture.*]

ASHES—Pots, 1st sort, '47-8 ℔ 100 lb	5 75	@	—
Pearls, 1st sort, '47-8	7 50	@	—
BEESWAX—American Yellow	— 22½	@	— 23½
CANDLES—Mould, Tallow ℔ lb	— 12	@	— 14
Sperm	— 32	@	— 33
COTTON—From ℔ lb.	— 6½	@	— 8½
COTTON BAGGING—Kentucky	— 15½	@	— 16
CORDAGE—American ℔ lb.	— 11	@	— 12
DOMESTIC GOODS—Shirtings, ℔ y.	— 4½	@	— 9
Sheetings	— 6	@	— 15
FEATHERS—American, live	— 35	@	— 37½
FLAX—American	— —	@	— 9
FLOUR & MEAL—Genesee, pure, bbl.	6 62½	@	— —
Genesee, from Western Wheat	6 50	@	6 56½
Troy	6 50	@	6 56½
Oswego	6 50	@	6 56½
Michigan	6 62½	@	— —
Ohio	6 50	@	6 56½
Brooklyn and New-York	6 50	@	— —
Brandywine	6 50	@	— —
Georgetown	6 37½	@	6 50
Baltimore, Howard-street	6 37½	@	— —
Richmond City Mills	— —	@	— —
Richmond Country	6 37½	@	— —
Alexandria	6 37½	@	— —
Fredericksburg and Petersburg	6 37½	@	6 62½
Rye Flour	3 62½	@	3 81½
Corn Meal, Western and State	2 37½	@	— —
Corn Meal, Jersey	2 43¾	@	2 50
GRAIN—Wheat, White ℔ bush.	— —	@	1 50
Wheat, Red and mixed	1 37½	@	1 42
Rye, Northern	— —	@	— 75
Corn, Jersey and Northern yel	— 52	@	— 53
Corn, Southern, white	— 54	@	— 56
Corn, Western, flat yellow	— —	@	— —
Oats, Northern	— 43	@	— 48
Oats, Jersey	— 38	@	— 40
HAY—North River in bales, ℔ 100 lb	— 56	@	— 62½
HEMP—American, dew-rotted ton	135 —	@	140 —
" " water-rotted	160 —	@	190 —
HOPS—1847	— 6½	@	— 7½
IRON—American Pig, No. 1	30 —	@	32 50
" Common	28 —	@	29 —
LIME—Thomaston ℔ bbl.	— 75	@	— 78
LUMBER—Boards, N.R., ℔ M. ft. clr.	35 —	@	40—
Boards, Albany Pine ℔ pce.	— 10	@	— 19
Plank, Georgia Y. Pine. ℔ M. ft	27 50	@	30 —
Staves, White Oak, pipe, ℔ M.	60 —	@	— —
Staves, White Oak, hhd	45 —	@	— —
Staves, White Oak, bbl	33 —	@	35 —
Staves, Red Oak, hhd	28 —	@	32 —
Hoops	27 —	@	32 —
Scantling, Eastern	17 50	@	20 —
Scantling, Oak	30 —	@	35 —
Timber, Oak ℔ cubic foot	— 22	@	— 25
Timber, White Pine	— 18	@	— 22
Timber, Georgia Yellow Pine	— 30	@	— 35
Shingles ℔ bunch	2 50	@	2 75
Shingles, Cedar, 3 feet, 1st quality	28 —	@	34 —
Shingles, Cedar, 3 feet, 2d quality	27 —	@	32 50
Shingles, Cedar, 2 feet, 1st quality	20 —	@	25 —
Shingles, Cedar, 2 feet, 2d quality	18 —	@	22 —
Shingles, Cypress, 2 feet	18 —	@	22 —
Shingles, Company	35 —	@	38 —
NAILS—Wrought, 6d to 20d ℔ lb.	— 8	@	— 13
Cut, 4d to 40d	— 4½	@	— 4¾
PLASTER PARIS—℔ ton	2 50	@	— —
PROVISIONS—Beef, Mess, ℔ bbl	8 —	@	8 75
Beef, Prime,	5 —	@	5 75
Pork, Mess, Ohio, old	— —	@	— —
Pork, Mess, Ohio, new	10 25	@	— —
Pork, Prime, Ohio, old	8 75	@	8 87½
Pork, Prime, Ohio, new	9 25	@	— —
Lard, Ohio, prime new ℔ lb.	— 7	@	— 8½
Hams, Pickled	— 6½	@	— 7
Hams, Smoked	— 7½	@	— 9
Shoulders, Pickled	— 4	@	— 4½
Beef Hams in Pickle	10 —	@	11 25
Beef, Smoked ℔ lb.	— 6½	@	— 6¾
Butter, Orange County Dairy	— 21	@	— 23
Butter, Western Dairy	— 16	@	— 18
Cheese	— 6½	@	— 7½
SEEDS—Clover, new ℔ lb.	— 7	@	— 7½
Timothy ℔ tierce	18 —	@	21 —
Flax, Rough, in bulk bush	1 37½	@	— —
SOAP—New-York ℔ lb.	— 4	@	— 7
TALLOW—American Rendered	— 9½	@	— 9¾
TOBACCO—Virginia @ lb.	— 3	@	— 7
Kentucky and Missouri	— 3¾	@	— 7½
WOOL—Am. Saxony, Fleece, ℔ lb.	— 42	@	— 47
American Full Blood Merino	— 38	@	— 40
American ½ and ¾ Merino	— 33	@	— 36
American Native and ¼ Merino	— 28	@	— 30
Superfine, Pulled, Country	— 31	@	— 33



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Marshall P. Wilder

President of the Mass. Horticultural Society

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